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THE REGISTRAR-GENERAL'S
STATISTICAL REVIEW
OF
ENGLAND AND WALES
FOR THE YEAR
1934

(New Annual Series, No. 14)

TEXT

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LONDON

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LIST OF CORRIGENDA IN THE STATISTICAL REVIEW.

YEAR 1932. PART I—MEDICAL.

TABLE 24 (page 311). County of Westmorland. Aggregate of Rural Districts.
Puerperal Sepsis. All Ages should read—3.

YEAR 1933—TEXT.

TABLE LXXVI (page 118). List No. 140. Post abortive sepsis.
Deaths of Married Women per million living at ages 35-45 1930-32—for 43
read 36.

YEAR 1934. PART I—MEDICAL.

TABLE 10 (page 45). Scarlet Fever (column 8).
Blackburn—for 32 read 42.
,, (page 49). Typhoid and Paratyphoid Fevers (column 2).
Cardiganshire—for 7 read 37.
TABLE 17 (page 76). Footnote (c).
For Matlock RD read Matlock UD.

YEAR 1934. PART II—CIVIL.

TABLE E (page 16). Footnote (c).
For Matlock RD read Matlock UD.

STATISTICAL REVIEW, 1934.

Note.—Of the tables referred to below, those numbered in Arabic will be found in "Tables, Part I—Medical," and those lettered in "Tables, Part II—Civil," while those numbered in Roman numerals appear in the text of this volume.

DEATHS.

The deaths of 476,810 persons were registered in England and Wales during 1934, 242,855 of these being males and 233,955 females.

This number is 4·0 per cent. below that for 1933.

Deaths of non-civilians, which numbered only 358, are now allocated to their administrative area of residence, and are included in all 1934 tables.

Death-Rates.—The death-rates used in this Review are of several kinds. The *crude* death-rate of a given region or locality represents the number of deaths which were registered during the year as belonging to that locality, after correction for transfers to the place of residence of the deceased, per 1,000 or million of the corresponding estimated population at the middle of the year. In this rate are included deaths at all ages whatsoever. For England and Wales as a whole the crude death-rate in 1934 was 11·8 per 1,000.

Specific death-rates relate either to mortality assigned to specific causes by the processes outlined at the commencement of the section "Causes of Death" (p. 44), or else to the mortality amongst selected groups of persons specified according to their sex, age, civil condition or occupation. Specific rates of the latter type are, with certain exceptions, obtained by relating the numbers of deaths registered as being those of persons in the selected group to the estimated number of such persons alive at the mid-year. Exceptions to this are the rate of infant mortality which is based upon the number of live births registered during the year, and certain death-rates connected with childbearing which, for reasons explained in the section on puerperal causes of death, are based upon the number of registered live and still-births.

Standardized death-rates are attempts to express the mortality of a population of changing or abnormal age distribution by a single figure calculated in such a way that the changes or abnormalities in constitution do not appreciably affect it. The standardized rates used in this Review for England and Wales as a whole, whether for all causes or specific causes, are the rates which would result if each sex and age group of the census population in 1901 was subject to the death-rate at that age during the year to which the rate

applies.* On this basis of standardization the rate from all causes in 1934 was 9·3 per 1,000 living, the lowest rate ever recorded.

As the population of this country in 1901 included relatively few infants and old people it forms a standard exceptionally favourable to low mortality. Its use for this purpose accordingly yields comparatively low standardized rates all round. In order to provide standardized rates for this country comparable with those of countries using the standard recommended by the International Statistical Institute (a composite population made up of those of a large number of European countries in 1900 or 1901), rates calculated upon the latter by the method suggested by the Institute† are shown in Table XXII, as well as those based on the 1901 English standard, which is that used elsewhere in this Review. It will be seen that use of the less favourable standard increases the rate from 9·3 to 10·4 per thousand.

Neither standard is satisfactory for the population as now constituted owing to the rapid changes in the proportionate age distribution which have occurred since 1901, but a change to some standard of more recent date would only temporarily remove this objection at the cost of grave disadvantages to the continuity of recorded death-rates. More complicated rates such as the life-table death-rate, whilst they would be free from some of the faults of the standardized rate as at present defined, suffer from the disadvantage that they postulate conditions which are hypothetical and their precise meaning is difficult to visualize.

The important effect of the rapid changes at present proceeding in the age-constitution of the population on the crude and standardized death-rates is evidenced by the fact that from 1901, when both rates were 16·9 per 1,000 persons living, the crude rate declined to 12·1 in 1921, but since then has shown no further tendency to fall, the average rate in 1921–25 being 12·2, in 1926–30 12·1, and in 1931–34 12·1. The standardized rate however, which reached 11·3 in 1921, has continued to fall to its present low record of 9·3.

Another method of expressing mortality by a single figure which is not influenced by the proportions at risk at different ages is to calculate an “equivalent average death-rate,”‡ that is to say an arithmetic mean of the rates at quinquennial groups of ages up to some convenient limit of age such as 65, this being equivalent to calculating a standardized death-rate at ages under 65 based upon a population equally distributed over the 13 age groups.§ This has

* For a full description of the methods employed for this “standardization” see The Registrar-General’s Decennial Supplement—1921, Part III (pages xxxiii—xliv). Standardized death-rates for the sexes separately quoted in this Review are based upon the age distribution of persons of undistinguished sex in the general population of England and Wales in 1901.

† *Annuaire International de Statistique*, 1917, p. viii.

‡ G. W. Yule; *Journal of Royal Statistical Society*, 1934. xcvii, Pt. I, 15.

§ If rates at all the quinquennial age groups are not available, twice the rate for the decennial group can be substituted without appreciable error.

the effect at present of giving too great weight to mortality at the higher ages 35–65, but the extent of that overweighting is rapidly diminishing year by year, whereas the underweighting of these ages by use of the 1901 standard population becomes continually more pronounced. This is made clear by the comparison of populations in Table I, the numbers in parentheses representing the standard population of persons at ages under 65 in 1901 if it were redistributed on the basis of equal weighting used in calculating the equivalent average death-rate.

Table I.—Population of Persons in England and Wales by Ages, per 10,000 at all ages, 1901, 1911, 1921, 1931 and 1934.

	1901		1911 Census.	1921 Census.	1931 Census.	1934 Estimated.
	Standard.	Uniform.				
0– ..	1,143	(733)	1,069	877	749	710
5– ..	2,099	(1,467)	1,995	1,895	1,635	1,644
15– ..	1,958	(1,467)	1,805	1,756	1,734	1,583
25– ..	1,616	(1,467)	1,651	1,520	1,605	1,665
35– ..	1,228	(1,467)	1,344	1,411	1,368	1,389
45– ..	892	(1,467)	978	1,167	1,235	1,235
55– ..	597	(1,467)	637	769	932	982
65– ..	331	—	377	434	536	569
75– ..	121	—	126	151	182	197
85 and up.	15	—	18	20	24	26
All ages ..	10,000	—	10,000	10,000	10,000	10,000

The equivalent average death-rates at ages under 65 for each sex give a simple measure, unaffected by age distribution, of the mortality up to that age, but the information given by these two figures would need to be supplemented by rates at 65–75 and 75 and over in order to gain a fairly complete picture of mortality.

In Table II the trends for each sex, since 1901, of (a) the crude death-rate, (b) the standardized death-rate, (c) the equivalent average death-rate under 65, and (d) the life-table death-rate (1,000 divided by the complete expectation of life at birth) are compared. The proportionate fall in the equivalent average death-rate under 65 has been only slightly greater than that of the standardized rate at all ages, notwithstanding that the improvement at the excluded ages over 65 has been very much less than at the earlier ages. Their simple definition and ready calculation, and the fact that they are not dependent upon an arbitrary standard population out of relation to present-day conditions, give these equivalent rates certain advantages over the standardized rates for separate causes, and these alternative rates have been given in several tables of this Review.

Table II.—Trend of Crude and Corrected Death-Rates since 1901 by Sex ; Rates per 1,000 living and per cent. of the rate in 1911.

	Crude all ages.		Standardized, all ages		Equivalent average rate under 65.		Life table death-rate, all ages	
	M.	F.	M.	F.	M.	F.	M.	F.

Rates per 1,000 living.

1901	18.1	15.8	18.5	15.5	16.2	13.2	—	—
1911	15.6	13.7	15.6	13.0	13.6	11.0	19.4	18.1
1921	13.0	11.3	12.5	10.2	10.5	8.5	18.0	16.8
1931	13.0	11.6	11.3	9.0	9.3	7.2	17.0	15.9
1932	12.7	11.4	10.9	8.7	8.9	6.9	—	—
1933	12.9	11.7	10.9	8.8	9.1	7.0	—	—
1934	12.5	11.1	10.4	8.3	8.8	6.7	—	—

Per cent. of rate in 1911.

1901	116	115	119	119	119	120	—	—
1911	100	100	100	100	100	100	100	100
1921	83	82	80	78	77	77	92	93
1931	83	85	72	69	68	65	87	82
1934	80	81	67	64	65	61	—	—

For most causes of death the standardized rates in Table 8 were below the average for the preceding five years, the comparison on this basis being specially favourable for influenza, whooping cough, respiratory diseases, tuberculosis, tabes dorsalis, cerebral hæmorrhage, epilepsy, fatty heart, gangrene, valvular disease of the heart, chronic nephritis and accidental burns in both sexes, and for encephalitis lethargica, meningitis and general paralysis in males. The causes which showed appreciable increases over the preceding five-year average were measles, scarlet fever, diphtheria, erysipelas, diseases of the ear and mastoid, cellulitis and angina pectoris in both sexes, disordered action of the heart and leukæmia in males, and peritonitis and injury by fall in females.

Adjusted Death-Rates for Local Areas.—In the Decennial Supplement for 1871–80 (45th Annual Report) “corrected death-rates” were given for each Registration County, defined as “the death-rates that would have been recorded had the age distribution of the population in each county been identical with the age distribution of the whole population of England and Wales.” The populations employed for the local rates and for the standard were derived from the means of the census populations of 1871 and 1881. On page xix of that Report a different method was used to measure the effect on mortality of differing age constitution of

the aggregates of urban and rural areas, for which the preceding method of standardization could not be used. This consisted in applying the mean death rates for England and Wales at different ages in 1871-80 to each of the populations of the aggregates at 1881 census and comparing the resulting death rates. In the Supplement for 1881-90 the first or "direct" method of standardization was again used, the standard population being the mean population of England and Wales in the decennium, and the second or "indirect" method was further developed for comparing urban with rural England (p. xxxvi, footnote). For the latter purpose the mean death rates in England and Wales at 11 age groups during 1881-90 were applied to the mean population of the urban or rural aggregate for the decennium at the same ages, and the resulting death-rate was then divided into the corresponding resulting death-rate in England and Wales during the decennium, producing a "factor for correction for age and sex distribution." The crude death-rate for the aggregate multiplied by this factor gave the "corrected death-rate."

In the Supplement to the 65th Annual Report, the direct method of standardization was applied to the rates for all registration districts, the standard population being the mean population in 1891-1900.

Following the Census of 1901, and in subsequent years to 1910, standardized rates were calculated and published in the Annual Reports of the Registrar General for each registration county, these being arrived at by the direct process of standardization using 1901 census population as standard. Similar rates for 1901-10 were tabulated for each registration district in the Supplement to the 65th Annual Report, these being also related to 1901 population as standard.

In the Report for 1911 the indirect method was employed for every administrative area, a standardizing factor being calculated by applying the mean death rates in England and Wales during 1901-10 for each sex at separate ages to the local population as constituted in 1911 on the one hand and to the standard population of England and Wales in 1901 on the other. These factors, by which the crude death-rates were to be multiplied, were employed throughout the ensuing decade until they were recalculated by applying the mean national death rates in 1920-22 to the local census population in 1921 and the standard population of England and Wales in 1901. The 1921 series was not published in the annual Reports but the appropriate factor was furnished to each local Medical Officer of Health.

The disadvantages of continuing to relate the death-rates of local areas to a standard population so different in age constitution from the present population of England and Wales are plain from the fact that a corresponding standardizing factor for England and Wales as a whole for the year 1931 calculated by applying

1930-32 rates would be .82, compared with unity in 1901 and .98 in 1911. In consequence, neither the standardizing factor nor the resulting standardized death-rate for a local area calculated on the 1901 standard now conveys any information in itself, without first comparing it with the corresponding factor or rate for the country as a whole.

What is needed is a simple ratio which immediately conveys to the mind, without further calculations, the extent to which a local death-rate in 1934 is in excess or defect of the rate expected in that year, after taking into account (1) the sex and age constitution of its population as determined at the most recent census, and (2) the mortality in the country as a whole during 1934. Whether the ratio be calculated by the direct or indirect method of standardization is of no practical importance provided that the standard rates used for the latter are those of a recent period of years.

This need has been met for 1934 by the calculation for every separate administrative area, county aggregate, county and region, as shown in Table 17, of an *areal comparability factor* (A.C.F.) and a *ratio of adjusted death-rate to national rate or standardized ratio*.

The method of calculation is as follows:—Standard death-rates for the triennium 1930-32 at various sex and age groups are obtained by dividing the deaths registered in the three years by three times the census population. The groups employed may be conveniently reduced to 11 without seriously affecting the accuracy of the resulting factor, viz. persons under 5, persons aged 5-34, males aged 35-54, 55-64, 65-74, 75-84, females of the same ages, and persons aged 85 and over. In certain areas where the population at 5-34 is known to be abnormally distributed owing to the presence of large schools or institutions for young people this age group is further subdivided. The standard rates are multiplied by the corresponding groups of the census population in 1931 of the area (as defined in 1934) and the sum of the resulting products divided by the total population gives the expected mean local death-rate at all ages in 1930-32. The ratio of the mean crude death-rate of England and Wales in 1930-32 to this local index rate is the "areal comparability factor" or "A.C.F." for the area as given in Column 13 of Table 17.

The A.C.F. for 1934 relates to the population of the area as defined by boundaries during that year, but it is of course based upon the sex and age constitution of that area as it was determined at the last census of 1931. Provided that there have not been in the meantime changes in boundary important enough to disturb appreciably the relative age distribution of the population included, the same comparability factor may be applied also to the crude rates of the preceding years 1931, 1932, or 1933, or to the mean rate for a series of years around the census as in Tables III and XCVII, and except where influenced by boundary changes in the future it will remain applicable until a new series of factors can be calculated on the basis of the next census.

The *adjusted death-rate* for 1934 is obtained by multiplying the local crude death-rate by the A.C.F. for that year, and the standardized ratio given in column 14 of Table 17 is the ratio of this adjusted death-rate to the crude death-rate of England and Wales in 1934. Adjusted local DR = A.C.F. \times crude D.R.

If it is desired to calculate *standardized death rates* based on 1901 standard population and comparable with those given for separate areas in the Annual Reports for 1911–14, the adjusted death rate must be further multiplied by the time comparability factor (T.C.F.) or ratio of the standardized national rate (persons) to the crude national rate (persons) for the year in question. Standardized local D.R. = T.C.F. \times A.C.F. \times crude local D.R. The numerical values of the T.C.F. for the years 1931 to 1934 are :—1931, .820; 1932, .808; 1933, .796; 1934, .790.

The assumption here involved is that the distribution by sex and age of the local population has undergone since the 1931 Census the same proportionate changes as has the distribution of the national population (the age changes in the national population between census years having been calculated annually since 1915 by adding births and deducting the deaths registered at various ages). Although this assumption is not necessarily true in the case of certain rapidly changing areas, it is the best approximation which can be made and is more satisfactory than the assumption hitherto made in local standardization for inter-censal years, namely that the local sex and age distribution remained unchanged until it was again ascertained by the next Census.

The comparability factors in Table 17 can only be applied to mortality from all causes, although for specific causes of death whose incidence according to sex and age is similar to that for all causes combined the appropriate factor would be found to be very similar. For most causes, however, the specific factor, which can be calculated in the same manner by substituting death-rates from the specific cause in 1930–32 for the death-rates from all causes, differs from the factor tabulated. This is shown below by a few examples which have been calculated for the county boroughs of Bournemouth and St. Helens.

		Comparability factors, 1934, for—				
		All causes.	Cancer.	Measles.	Diabetes.	Heart disease.
						Respiratory tuberculosis.
Bournemouth	..	0.75	0.70	1.39	0.68	0.65
St. Helens	..	1.23	1.32	0.80	1.34	1.46
						0.97

Whilst the cancer, diabetes and heart disease factors tend to resemble the factors for all causes, those for measles and phthisis are widely different.

The effect of standardization of the death rates of the county boroughs upon the amount of variation met with in these rates is seen in Table III. Whilst the ratio of the crude death-rate in the quinquennium 1929–33 to the national rate ranged from .85 (Coventry) to 1.27 (Hastings), the corresponding standardized ratio

ranged from .83 (Eastbourne) to 1.38 (Oldham), that is to say the range was increased by the process of standardization. The correction for differences in age distribution accentuates the contrasts between the mortalities of the northern industrial towns and the residential and agricultural towns rather than diminishing them. Of the 39 towns with crude mortality 8 or more per cent. in excess of that of England and Wales in 1929-33, standardization reduced the ratio for 12, the most remarkable reductions being for Hastings, 1.27 to .85, Bath, 1.15 to .84, and Bournemouth, 1.15 to .86. No change resulted for one town, but for the remaining 26 the adjusted death-rate was more in excess of the national rate than was the crude rate, 24 of these towns being in the North Region. Far from accounting for part of the wide differences in mortality rates between individual county boroughs, the peculiarities in age distribution tend in general to mask these differences, the more favourably circumstanced towns having larger proportions of old people. This is no new phenomenon, for in 1911, whereas the ratio of the crude death rate to the national rate ranged from .72 (Eastbourne) to 1.38 (Liverpool and Middlesbrough), the ratio for standardized rates had a wider range from .75 (Eastbourne) to 1.50 (Middlesbrough). The changes which have taken place in the standardized death rates of each separate county borough since 1911-14 are dealt with in a special section on "Standardized Mortality of the County Boroughs and Administrative Counties in 1931-34 compared with 1911-14" (pp. 144-150 and Tables XCVII and XCVIII). A study of the effect of eliminating several factors which do contribute to the mortality differences shown in Table III will be found in the section on "Relation between Mortality in the County Boroughs and Distribution of Social Classes, Housing Density and Situation" (pp. 150-155).

Table III.—Distribution of Comparability Factors, Crude and Standardized Mortality Ratios of the County Boroughs, 1929-33 and 1934.

—	.63-	.68-	.73-	.78-	.83-	.88-	.93-	.98-	1.03-	1.08-	1.13-	1.18-	1.23-	1.28-	1.33-	1.38-	Total
Ratio of crude death-rate to national rate 1929-33	—	—	—	—	2	3	10	13	16	15	18	3	3	—	—	—	83
Ratio of adjusted death-rate to national rate, 1929-33	—	—	—	—	4	6	9	8	7	13	8	10	7	7	3	1	83
Ratio of crude death rate to national rate, 1934	—	—	—	—	3	7	14	14	14	14	9	4	3	—	1	—	83
Ratio of adjusted death-rate to national rate, 1934	—	—	—	1	3	9	8	10	12	11	7	9	4	6	2	1	83
Comparability factor, 1934	1	—	2	2	4	5	6	11	13	19	12	7	1	—	—	—	83

Mortality at different portions of the year.—Table 4 indicates that the crude death-rate was below the corresponding rate in the decade 1921-30 for the March and December quarters, but was higher than in the preceding four years in the June quarter and

higher than in the preceding year in the September quarter. Table 31 shows that the last three quarters were unusually warm when judged by the mean air temperature at Greenwich, the December quarter being the warmest since 1913.

The contributions of the four quarters to the year's mortality in quinquennial periods since 1851, and in each year since 1931, are shown in Table IV. It should be noted, however, that the crude quarterly mortalities in Tables IV and 4 do not represent the full improvement which would be registered since 1901 if these rates were standardized.

The mortality of the June quarter was, for the first time since 1928, as high as that of the year as a whole.

The present stability of the death-rate in the last three quarters of the year is more apparent from the experience during the last ten years (Table 4). The average mortality in these quarters during the decennium ranged only from 10·7 to 11·4, being 10·9 in 1934, while the death-rate in the March quarter fluctuated between 13·4 in 1930, and 20·9 in 1929, an influenza year when the first quarter was exceptionally cold. So long as these tendencies continue,

Table IV.—Quarterly Death-rates in each quinquennium 1851–1930 and in 1931, 1932, 1933 and 1934 with ratio to yearly rate taken as 100.

			Death-rate per 1,000 living.				Ratio to yearly rate taken as 100.			
			March.	June.	September.	December.	March.	June.	September.	December.
1851–55	...	...	25·3	22·5	21·0	21·9	111	99	93	96
1856–60	...	...	24·1	21·6	19·6	21·9	111	99	90	100
1861–65	...	...	25·7	22·0	20·4	22·3	114	97	90	99
1866–70	...	...	24·7	21·6	21·5	22·0	110	96	96	98
1871–75	...	...	24·3	21·1	20·4	22·1	110	96	93	100
1876–80	...	...	23·2	20·7	18·8	20·6	112	100	90	99
1881–85	...	...	21·4	19·3	17·6	19·4	110	99	91	100
1886–90	...	...	21·7	18·0	17·0	18·9	115	95	90	100
1891–95	...	...	21·8	18·5	16·4	18·1	117	99	88	97
1896–1900	...	...	19·5	16·6	17·5	17·2	110	94	99	97
1901–05	...	...	17·9	15·2	14·9	16·1	112	95	93	101
1906–10	...	...	17·4	14·1	12·6	14·7	118	96	86	100
1911–15	...	...	16·9	13·7	12·7	14·0	118	96	89	98
1916–20	...	...	17·5	13·5	10·9	15·8	122	94	76	110
1921–25	...	...	15·1	11·9	9·6	12·0	124	98	79	98
1926–30	...	...	15·9	11·5	9·4	11·6	131	95	78	96
1931	...	...	16·5	11·5	9·6	11·7	134	93	78	95
1932	...	...	15·4	11·6	9·7	11·5	128	97	81	96
1933	...	...	17·1	10·8	9·4	12·0	139	88	76	98
1934	...	...	14·6	11·8	9·6	11·2	124	100	81	95

the mortality experienced in the March quarter virtually determines the death-rate for the year.

The numbers of deaths from different causes which occurred in each of the first nine months of the year are set out in Table 23.

Mortality of each sex.—The excess of male over female standardized mortality in 1934 was 25 per cent., compared with 24 in 1933 and 25 in 1932. Comparing the sex rates age by age, male excess occurred at each age group except 10–15, this excess being greater at ages 15–25 and 45 and upwards, than in either of the quinquennia 1921–25 or 1926–30. These changes recorded in Table V are derived from Table 5, with substitution for 1911–15 and 1916–20 of rates based on the total male population and all deaths registered in this country for those in Table 5, which refer to civilian males only in those periods.

Table V shows that male excess is slight or absent at ages 10–15, a female excess having been the rule until 1927. At 5–10 a small

Table V.—Mortality of Males per cent. of that of Females at Various Ages from 1841–45 onwards. (See Table 5.)

	All Ages Standard- ized.	0–	5–	10–	15–	20–	25–	35–	45–	55–	65–	75–	85 and up- wards
1841–45	109	117	102	92	88	105	95	101	114	111	111	109	106
1846–50	108	116	103	95	91	104	94	99	113	112	111	109	107
1851–55	110	116	104	98	90	103	97	102	118	114	112	110	106
1856–60	109	115	99	96	90	102	96	103	118	115	111	108	107
1861–65	111	115	102	98	93	105	100	109	122	118	112	109	110
1866–70	113	115	107	100	94	106	105	113	124	120	115	109	111
1871–75	115	117	108	100	97	109	109	119	128	121	114	111	110
1876–80	116	118	107	97	96	108	109	119	129	122	114	112	111
1881–85	115	118	102	97	96	102	104	117	127	122	116	113	112
1886–90	116	119	100	97	98	106	107	117	129	122	117	112	114
1891–95	116	119	98	96	100	108	108	118	128	121	115	111	110
1896–00	118	118	98	96	106	120	116	122	129	124	117	113	109
1901–05	119	119	97	95	107	119	118	121	130	128	119	115	110
1906–10	120	119	97	95	107	121	118	121	129	128	121	115	113
1911–15	122	120	100	95	111	122	124	126	132	133	124	118	115
1916–20	124	121	100	92	114	122	124	131	135	137	132	121	111
1921–25	122	124	104	100	100	113	114	130	132	133	127	119	110
1926–30	124	125	110	105	106	108	112	134	140	136	130	121	107
1925 ..	123	124	104	100	104	106	115	131	135	135	129	121	108
1926 ..	123	124	109	100	104	107	112	133	135	134	129	123	111
1927 ..	123	125	109	107	104	110	112	135	137	134	129	120	108
1928 ..	125	126	109	113	108	103	112	130	138	136	130	123	110
1929 ..	122	122	113	100	108	110	111	139	143	134	126	117	103
1930 ..	127	128	110	104	109	112	111	133	144	139	133	121	103
1931 ..	126	128	115	100	108	114	106	129	140	135	132	121	111
1932 ..	125	125	116	108	114	114	110	123	135	137	134	123	110
1933 ..	124	126	110	107	113	114	109	124	141	137	129	122	110
1934 ..	125	124	104	100	109	115	107	124	142	142	132	124	111

female excess during 1891–1910 has given place to a male excess, reaching 16 per cent. in 1932, but amounting to only 4 per cent. in 1934. At 15–20 a similar reversal of the sex ratio took place at the end of last century. At 25–35, on the other hand, the male excess, after reaching a maximum in 1911–20, is declining.

In 1934 the maximum disparity in sex mortality is reached at ages 45–65, after which it decreases again with advancing age. Only in

extreme old age has the female mortality not declined more than the male since the middle of last century.

The causes of death accounting for this large male excess may be gathered from Table 8, in which the mortality disadvantage of females arising from their greater age is neutralized by reference of the rates for both sexes to a common population basis.

The causes chiefly accounting for male excess, with the contribution of each to its total of 2,100 per million, are seen to be, in order of importance, heart disease (332), accident (297), pneumonia (276), tuberculosis (175), digestive diseases (159), and arterio-sclerosis (121). These causes jointly contribute 65 per cent. of the total male excess. The principal causes common to both sexes in Table 8, for which female standardized mortality exceeds that of males, are, in order of numerical importance, mitral or unspecified valvular disease, whooping cough, rheumatoid and osteo-arthritis, diabetes, non-malignant tumours, gall stones, other diseases of the liver and gall bladder (not cirrhosis), peritonitis, diphtheria, rheumatic fever and pernicious anæmia.

Infant Mortality.

Of the 476,810 deaths registered during the year, 35,017, or 7·3 per cent., were those of infants under one year of age.

The rate of infant mortality resulting from these deaths is 59 per 1,000 live births; this rate is 5 per 1,000 below that of the previous year and establishes a new low record.

The rates in the four quarters of the year were 78, 56, 46 and 55 respectively, being higher in the June quarter but lower in the other quarters than in 1933.

Table VI traces the changes in the quarterly incidence of infantile mortality during the last 64 years, and shows, in conjunction with Table VII, that until 1901-05, and again, but to a very slight degree, in 1911-15, while the coldest months of the year yielded the highest general death-rate, the hot summer months levied the highest toll on infant life.

Since the beginning of the present century, this experience has undergone a remarkable change. In all four quarters, the infant death-rate has fallen in each successive quinquennium, but with great inequality. Comparing 1934 with 1896-1900, the fall ranges from 45 per cent. in the March quarter, 55 in the June, and 63 in the December, to 78 per cent. in the September quarter. The mortality in the third quarter now yields the lowest quarterly rate, while the March quarter yields the highest.

The changes in the infant mortality rate from all causes and from diarrhoeal diseases since 1861-65 are shown in Table VII. The diarrhoeal rate for 1934, 4·84 per 1,000 live births, is the lowest ever recorded (*see* Table 12), notwithstanding the warmth of the September quarter.

Table VI.—Average Rate of Infantile Mortality by Quarters in Quinquennia, 1871–1930, and in 1931, 1932, 1933 and 1934.

	Yearly Average.	Quarterly Averages.			
		March.	June.	September.	December.
1871–75	153	151	133	180	149
1876–80	145	147	128	161	143
1881–85	139	140	125	152	139
1886–90	145	146	125	163	147
1891–95	151	151	132	169	151
1896–1900	156	142	124	212	148
1901–05	138	137	113	162	140
1906–10	117	124	98	120	128
1911–15	110	119	91	120	109
1916–20	90	116	83	75	91
1921–25	76	94	70	62	77
1926–30	68	91	60	52	69
1931	66	94	59	46	67
1932	65	88	59	50	65
1933	64	84	53	49	69
1934	59	78	56	46	55

Table VII.—Infant Mortality, distinguishing Mortality from Diarrhoeal Diseases, 1861–1934.

Deaths under 1 year of age per 1,000 Live Births.

Year.	Diarrhoeal Diseases.	Other Causes.	All Causes.	Year.	Diarrhoeal Diseases.	Other Causes.	All Causes.
1861–65	15	136	151	1921	14	69	83
1866–70	20	137	157	1922	6	71	77
1871–75	19	134	153	1923	7	62	69
1876–80	16	129	145	1924	6	69	75
1881–85	14	125	139	1925	7	68	75
1886–90	17	128	145	1926	8	62	70
1891–95	20	131	151	1927	6	64	70
1896–00	31	125	156	1928	6	59	65
1901–05	23	115	138	1929	7	67	74
1906–10	18	99	117	1930	5	55	60
1911–15	19	91	110	1931	5	61	66
1916–20	9	81	90	1932	6	59	65
1921–25	8	68	76	1933	6	58	64
1926–30	6	62	68	1934	5	54	59

Table VIII shows that the fall during the five quinquennia for which detailed age distinction is available was continuous at every age-group except 1–7 days, at which age the rate in 1926–30 was slightly in excess of that for the preceding five years. During the first month of life the fall was 21 per cent., but at the later age-groups

the average fall was slightly over 50 per cent., reaching a maximum of 56 per cent. at 3–6 months. At ages from 1 week upwards a further fall was registered by 1934 on the 1926–30 rates ranging from 9 per cent. in the second week to 32 per cent. at 9–12 months. The rates attained were the lowest recorded for each age-period over 2 weeks. In the first week of life there has been in recent years a tendency for the rate to increase, and in seeking a cause for this the increasing proportion of primiparous births to all births should be borne in mind.

Distribution of Infant Mortality.—Table IX shows how infant mortality was distributed in 1934 between the sexes and throughout the country

For convenience in the interpretation of this and similar tables where the regional subdivision is employed, the counties comprising each region are given below.*

The rates for the aggregates of different classes of area are, as usual, highest for the county boroughs and lowest for rural districts. London usually occupies an intermediate position together with the smaller towns, but in 1934 the rate was higher than in the aggregate of county boroughs. In London's outer ring, which comprises almost as great a population as London itself, infant mortality was lower than in the aggregate of all the rural districts outside Greater London, and was 19·9 per 1,000 live births less than in the Administrative County. The only region showing a lower rate than this was the surrounding area of South-East England outside Greater London.

It has been noticed almost invariably since 1911 that the Northern county boroughs have had the highest and the rural districts of the South the lowest infant mortality rate, and it was pointed out in Table XXI of the Review for 1931 (Text, p. 27) that when the

* *Regional Summary.*—The country was re-divided into regions in 1931, after consultation with other Government Departments, with a view to securing greater homogeneity in the character of the sectional populations than was provided by the old grouping into North, Midlands, South (including London) and Wales.

The counties in the various regions are as follow :—

<i>South East.</i> Bedfordshire. Berkshire. Buckinghamshire. Essex. Hertfordshire. Kent. London. Middlesex. Oxfordshire. Southampton. Surrey. Sussex, East. " West. Wight, Isle of.	<i>North I.</i> Durham. Northumberland. <i>North II.</i> Cumberland. Westmorland. Yorkshire. East Riding. North Riding. <i>North III.</i> Yorkshire, West Riding. York C.B. <i>North IV.</i> Cheshire. Lancashire.	<i>Midland I.</i> Gloucestershire. Herefordshire. Shropshire. Staffordshire. Warwickshire. Worcestershire. <i>Midland II.</i> Derbyshire. Leicestershire. Northamptonshire. Nottinghamshire. Peterborough, Soke of.	<i>East.</i> Cambridgeshire. Ely, Isle of. Huntingdonshire. Lincolnshire— Parts of Holland. " Kesteven. " Lindsey. Norfolk. Rutlandshire. Suffolk, East. " West. <i>South West.</i> Cornwall. Devonshire. Dorsetshire. Somersetshire. Wiltshire.	<i>Wales I.</i> Brecknockshire. Carmarthenshire. Glamorganshire. Monmouthshire. <i>Wales II.</i> Anglesey. Caernarvonshire. Cardiganshire. Denbighshire. Flintshire. Merionethshire. Montgomeryshire. Pembrokeshire. Radnorshire.
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For the constitution of Greater London, see pp. 63–65 of the Preliminary Report on the Census of England and Wales, 1931.

twelve regional aggregates in use prior to 1931, apart from London, were arranged in order of the mean number of persons per room at the census, the rates for 1926–30 almost followed the same order.

In Table VII of the Review for 1932 it was further shown that when the county boroughs and county aggregates of urban and

Table VIII.—Age Distribution of Infant Mortality, 1881–1934.

Rates per 1,000 (Live) Births.

Year.	Days.		Weeks.				Months.					Total under one year.
	0-1	1-7	0-1	1-2	2-3	3-4	Total under four weeks	Four weeks to 3 m'nths	3-6	6-9	9-12	
1881-1885 ..	—	—	—	—	—	—	67	28	44			139
1886-1890 ..	—	—	—	—	—	—	69	30	46			145
1891-1895 ..	—	—	—	—	—	—	74	31	46			151
1896-1900 ..	—	—	—	—	—	—	74	34	48			156
1901-1905 ..	—	—	—	—	—	—	70	28	40			138
1906-1910 ..	11.5	13.0	24.5	5.8	5.7	4.2	40.2	22.8	22.0	17.3	14.8	117.1
1911-1915 ..	11.4	12.7	24.1	5.7	5.3	3.9	39.0	20.2	19.6	15.9	14.1	108.7
1916-1920 ..	11.0	12.4	23.4	5.6	4.7	3.4	37.0	16.5	14.6	12.0	10.8	90.9
1921-1925 ..	10.4	11.3	21.7	5.0	3.9	2.8	33.4	12.8	11.3	9.2	8.3	74.9
1926-1930 ..	10.3	11.5	21.8	4.3	3.2	2.4	31.8	10.9	9.6	8.1	7.5	67.9
1906 ..	11.8	13.2	25.0	6.1	6.2	4.6	41.9	25.7	27.0	20.7	17.2	132.5
1907 ..	11.3	13.1	24.4	6.0	5.9	4.5	40.7	23.3	21.3	17.3	15.1	117.6
1908 ..	11.5	12.8	24.3	5.9	5.8	4.3	40.3	24.2	23.6	17.7	14.6	120.4
1909 ..	11.6	13.2	24.7	5.7	5.3	4.0	39.8	20.4	19.2	15.6	13.8	108.7
1910 ..	11.5	12.5	24.1	5.4	5.1	3.8	38.5	20.0	18.8	15.0	13.2	105.4
1911 ..	11.6	12.7	24.3	6.0	6.0	4.5	40.6	24.7	25.9	20.6	17.4	129.2
1912 ..	11.3	12.9	24.2	5.6	5.0	3.7	38.4	17.7	14.9	12.5	11.4	94.7
1913 ..	11.8	12.7	24.5	5.8	5.4	3.9	39.5	20.3	19.8	15.7	13.6	108.9
1914 ..	11.4	12.7	24.1	5.5	5.0	3.9	38.5	19.3	18.7	15.0	13.0	104.4
1915 ..	10.9	12.5	23.4	5.7	5.0	3.7	37.7	18.6	18.2	16.0	15.2	105.8
1916 ..	10.9	12.3	23.2	5.6	4.9	3.4	36.9	16.9	15.2	11.7	10.3	91.1
1917 ..	11.0	12.4	23.4	5.6	4.8	3.4	37.1	16.9	15.0	11.6	10.6	91.1
1918 ..	11.1	12.1	23.2	5.5	4.6	3.4	36.6	17.1	16.1	14.4	13.7	97.9
1919 ..	12.2	13.7	25.9	6.1	4.9	3.6	40.4	16.4	14.4	11.8	10.3	93.2
1920 ..	10.4	11.5	21.9	5.3	4.6	3.3	35.0	15.5	13.0	11.0	10.0	84.5
1921 ..	10.8	11.6	22.4	5.4	4.5	3.0	35.2	14.7	13.7	9.7	7.8	81.2
1922 ..	10.4	11.6	22.0	5.2	4.1	2.8	33.9	12.4	10.6	9.2	8.6	74.7
1923 ..	10.2	10.9	21.1	4.6	3.6	2.6	31.9	11.4	10.0	8.3	7.6	69.2
1924 ..	10.6	11.2	21.8	4.8	3.8	2.6	33.0	12.4	10.8	9.3	8.8	74.2
1925 ..	10.1	11.1	21.2	4.7	3.7	2.7	32.3	12.5	11.2	9.4	9.0	74.5
1926 ..	10.0	11.3	21.3	4.6	3.6	2.5	31.9	11.6	10.4	8.6	7.7	70.2
1927 ..	10.6	11.6	22.2	4.3	3.4	2.5	32.3	10.7	9.7	8.7	8.2	69.7
1928 ..	10.4	11.2	21.6	4.1	3.0	2.4	31.1	10.7	9.2	7.4	6.8	65.1
1929 ..	10.4	11.9	22.3	4.6	3.3	2.6	32.8	11.6	10.7	9.9	9.4	74.4
1930 ..	10.4	11.6	22.0	3.8	2.9	2.2	30.9	9.6	7.8	6.1	5.5	60.0
1931 ..	10.4	11.7	22.1	4.0	3.1	2.4	31.6	10.9	9.3	7.8	6.8	66.4
1932 ..	10.6	11.8	22.4	3.8	3.0	2.4	31.6	10.8	9.1	7.2	6.3	65.0
1933 ..	11.1	11.8	22.9	4.0	3.1	2.2	32.2	9.9	8.8	6.8	6.0	63.7
1934 ..	10.9	11.7	22.6	3.9	2.8	2.0	31.3	8.8	7.5	5.8	5.1	58.6

Rates per 1,000 of those for 1906-10.

1906-1910 ..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1911-1915 ..	991	977	984	983	930	929	970	886	891	919	953	928
1916-1920 ..	957	954	955	966	825	810	920	724	664	694	730	776
1921-1925 ..	904	869	886	862	684	667	831	561	514	532	561	640
1926-1930 ..	896	885	890	741	561	571	791	478	436	468	507	580
1926 ..	870	869	869	793	632	595	794	509	473	497	520	599
1927 ..	922	892	906	741	596	595	803	469	441	503	554	595
1928 ..	904	862	882	707	526	571	774	469	418	428	459	556
1929 ..	904	915	910	793	579	619	816	509	486	572	635	635
1930 ..	904	892	898	655	509	524	769	421	355	353	372	512
1931 ..	904	900	902	690	544	571	786	478	423	451	459	567
1932 ..	922	908	914	655	526	571	786	474	414	416	426	555
1933 ..	965	908	935	690	544	524	801	434	400	393	405	544
1934 ..	948	900	922	672	491	476	779	386	341	335	345	500

Table IX.—Distribution of Infant Mortality, 1934.

	Deaths per 1,000 (Live) Births.					Deaths per 1,000 (Live) Births.				Mortality per cent. of that in England and Wales.
	Males.	Fe-males.	Both Sexes.	Both Sexes.		Males.	Fe-males.	Both Sexes.	Both Sexes.	
England and Wales	65.4	51.4	58.6	100						
South-east ..	57.9	45.9	52.1	89	East	54.9	43.5	49.3	84	
Greater London	63.0	51.0	57.2	98	South-west	53.5	45.2	49.4	84	
Remainder of					Wales	72.3	56.3	64.5	110	
South-east ..	50.1	38.1	44.3	76	Wales I	74.3	55.5	65.2	111	
North ..	74.4	58.2	66.5	113	" II	66.1	58.7	62.4	106	
North I ..	85.0	69.7	77.6	132	County Boroughs* ..	73.3	57.4	65.6	112	
" II ..	69.7	52.3	61.2	104	Other Urban Districts*	61.1	48.8	55.1	94	
" III ..	68.1	50.3	59.4	101	Rural Districts* ..	60.2	45.4	53.0	90	
" IV ..	74.6	59.2	67.1	115	Greater Admin. Co.	73.3	61.1	67.4	115	
Midland ..	64.7	50.3	57.7	98	London { Outer Ring	53.1	41.5	47.5	81	
Midland I ..	66.9	52.0	59.7	102						
" II ..	60.3	47.0	53.8	92						

* Excluding Greater London.

rural districts were grouped according to their mean densities per room, the infant mortality rates in 1930–32 increased regularly with the density. Thus whilst county boroughs with mean densities less than 0.7 persons per room had an average rate of 57.6 per 1,000 births, those with densities exceeding 1.15 per room had an average rate of 92.7. A similar progression was evident for the county aggregates, but for the Metropolitan boroughs the increase was only noticeable for those with mean densities exceeding 1.3 persons per room. It must be remembered, however, that the mean density per room tends to increase from South to North, this being evident when the county boroughs are grouped according to the zones of latitude in which they are situated and also according to the percentage of the populations in private families who were living more than two per room in 1931 (*see* Table VII of the Review for 1933).

In Table X the trend of infant mortality attributed to the group of congenital causes (premature birth, debility, malformations, etc., Nos. 157–161 of the International List), and to all other causes, since 1930–32, is compared for (a) the group of 14 county boroughs* having densities of 1.00 or more persons per room, at the census of 1931, (b) the group of 6 county aggregates of urban districts† having average densities of .85 or more persons per room, (c) the group of 15 county aggregates of rural districts‡ having average densities

* Dewsbury, Dudley, Gateshead, Middlesbrough, Newcastle-on-Tyne, St. Helens, South Shields, Stoke-on-Trent, Sunderland, Tynemouth, West Ham, West Hartlepool, West Bromwich, Wigan.

† Durham, Northumberland, Staffordshire, Yorkshire West Riding, Glamorganshire, Monmouthshire.

‡ Buckinghamshire, Cambridgeshire, Cornwall, Devonshire, Huntingdonshire, Middlesex, Norfolk, Rutlandshire, Somersetshire, Surrey, Sussex East, Sussex West, Isle of Wight, Caernarvonshire, Cardiganshire.

below .70 persons per room, (d) all the county boroughs with densities below 1 per room, (e) London, with a density per room of .98, and (f) England and Wales as a whole, with an average density of .83.

Table X.—Infant Mortality from Congenital and Other Causes, in groups of areas of certain densities of persons per room in 1931—1930-32, 1933 and 1934.

		Congenital Causes.						Other Causes.					
		County boroughs with 1 or more persons per room.	County aggregates of U.D.'s with .85 or more persons per room.	County aggregates of R.D.'s with less than .7 persons per room.	County boroughs with less than 1 per room.	London A.C. (.98 persons per room).	England and Wales.	County boroughs with 1 or more persons per room.	County aggregates of U.D.'s with .85 or more persons per room.	County aggregates of R.D.'s with less than .7 persons per room.	County boroughs with less than 1 per room.	London A.C. (.98 persons per room).	England and Wales.
		a	b	c	d	e	f	a	b	c	d	e	f
		Rates per 1,000 Live Births.											
1930-32	.. ..	34.8	35.3	28.5	32.8	25.5	31.1	48.5	37.4	20.1	37.6	37.9	32.7
1933	.. ..	38.6	37.5	29.7	35.0	27.1	33.1	47.2	37.7	17.9	36.6	32.4	30.6
1934	.. ..	36.6	35.8	29.8	33.8	26.8	31.7	40.5	28.0	18.8	29.4	40.6	26.9
		Rates per cent. of those in 1930-32.											
1933	.. ..	111	106	104	107	106	106	97	101	89	97	85	94
1934	.. ..	105	101	105	102	105	102	84	75	94	78	107	82

Although no improvement has occurred in the rate from congenital causes in any of these groups of areas since 1930-32, the mortality rates from causes other than congenital have declined by 16 and 25 per cent. respectively in the two groups of areas with least satisfactory housing indices, compared with a decline of 6 per cent. for the most satisfactory group (c), and 18 per cent. in the country as a whole. The London rate, being influenced by the biennial periodicity of measles, was lower in 1933, but higher in 1934 than the average rate of 1930-32. The high rate of 40.5 per 1,000 live births for group (a) is in part attributable to the fact that 11 of the 14 county boroughs are situated in the north, and in part to the social conditions of which the average number of persons per room is an index, and the contrast between this rate and that of 29.4 for group (d) is indicative of the effect of these factors on infant mortality from causes other than congenital.

Table IX shows that in 1934 North I gave the highest rate of 77.6 per 1,000 births, this rate being 132 per cent. of the rate in England and Wales. North IV followed with 115 per cent., and Wales I with 111. The Greater London rate was 98 per cent. of that in England and Wales, that of the Eastern Counties and the South-West 84, and of the South-Eastern region outside Greater London 76.

Table XI.—Infant Mortality at Various Stages of Infancy in different Classes of Area compared with that in 1911–15 and 1926–30.

		Under 4 Weeks.				4 Weeks to 3 Months.				3-6 Months.			
		Mortality (per 1,000 Live Births) compared with 1911-15 taken as 1,000.											
		London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.
1911-15 ..	..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1916-20 ..	..	949	943	940	971	834	810	790	834	793	739	691	726
1921-25 ..	..	800	855	862	871	574	640	627	672	605	604	550	577
1926-30 ..	..	728	812	823	841	505	548	507	582	539	516	430	480
		Mortality (per 1,000 Live Births) compared with 1926-30 taken as 1,000.											
		Greater London.	Outside Greater London.			Greater London.	Outside Greater London.			Greater London.	Outside Greater London.		
			County Boroughs.	Other Urban Districts.	Rural Districts.		County Boroughs.	Other Urban Districts.	Rural Districts.		County Boroughs.	Other Urban Districts.	Rural Districts.
1926-30 ..	..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1926 ..	..	1,002	1,013	1,003	978	1,029	1,079	1,083	1,069	1,044	1,080	1,129	1,089
1927 ..	..	993	1,018	1,032	1,005	889	976	1,025	1,070	931	1,004	1,087	1,050
1928 ..	..	994	985	967	965	1,068	978	966	928	1,059	971	888	934
1929 ..	..	1,041	1,020	1,027	1,060	1,091	1,041	1,070	1,088	1,094	1,117	1,134	1,115
1930 ..	..	969	964	971	995	922	921	852	837	870	825	754	805
1931 ..	..	1,017	981	989	1,010	1,075	993	1,003	937	1,037	980	946	910
1932 ..	..	1,028	988	990	984	1,025	1,011	963	1,004	1,017	930	925	983
1933 ..	..	1,041	1,007	1,003	1,016	869	938	906	927	891	956	905	854
1934 ..	..	980	983	981	997	1,030	787	710	813	982	716	734	808
		6-9 Months.				9-12 Months.				Total under 1 Year.			
		Mortality (per 1,000 Live Births) compared with 1911-15 taken as 1,000.											
		London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.
1911-15 ..	..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1916-20 ..	..	735	729	685	739	738	732	701	736	833	818	800	851
1921-25 ..	..	578	604	568	583	592	643	573	602	655	700	683	721
1926-30 ..	..	546	517	463	506	529	550	478	535	592	626	598	659
		Mortality (per 1,000 Live Births) compared with 1926-30 taken as 1,000.											
		Greater London.	Outside Greater London.			Greater London.	Outside Greater London.			Greater London.	Outside Greater London.		
			County Boroughs.	Other Urban Districts.	Rural Districts.		County Boroughs.	Other Urban Districts.	Rural Districts.		County Boroughs.	Other Urban Districts.	Rural Districts.
1926-30 ..	..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1926 ..	..	950	1,096	1,087	1,073	1,004	1,038	1,037	1,000	1,007	1,047	1,045	1,017
1927 ..	..	954	1,059	1,110	1,154	921	1,094	1,172	1,188	952	1,024	1,062	1,052
1928 ..	..	1,040	883	880	851	1,039	885	836	874	1,028	956	933	936
1929 ..	..	1,213	1,254	1,185	1,186	1,209	1,280	1,241	1,182	1,100	1,100	1,088	1,094
1930 ..	..	849	707	736	729	830	703	714	756	913	871	872	900
1931 ..	..	902	992	917	973	817	936	925	908	991	978	971	974
1932 ..	..	915	897	824	925	937	791	795	910	1,060	947	938	974
1933 ..	..	759	884	821	829	691	832	789	829	910	951	932	948
1934 ..	..	878	702	615	719	855	644	591	715	960	833	825	893

Compared with the preceding year most of the regions showed substantially lower rates, the percentage fall being 17 in North III, 16 in Midland II and Wales I, 14 in North IV and 13 in North II, whereas in Greater London mortality was higher.

Adhering to the density classification hitherto used, it is seen from Table XI that the fall from 1911-15 to 1926-30 amounted to 41 per cent. in London, 37 per cent. in the county boroughs, 40 per cent. in the small towns and 34 per cent. in the rural districts. The 1934 rates showed a further improvement on 1926-30 rates amounting to 17 per cent. in the county boroughs and small towns and 11 per cent. in the rural districts, Greater London being excluded in each case.

Distribution of the Fall in Mortality at Various Stages of Infancy.—The reduction of mortality at various stages of infancy in different classes of area is outlined for the period during which the necessary detail of tabulation is available in Table XII.

Table XII.—Infant Mortality (per 1,000 Live Births) at Various Stages of Infancy in Different Regions of England and Wales, per 1,000 of that in 1916-20.

	Under 4 Weeks.				4 Weeks to 3 Months.				3-6 Months.			
	England and Wales.	North.	Rest of* England.	Wales.	England and Wales.	North.	Rest of* England.	Wales.	England and Wales.	North.	Rest of* England.	Wales.
1911-15	1,053	1,032	1,074	1,051	1,232	1,194	1,262	1,310	1,370	1,322	1,425	1,540
1916-20	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1921-25	902	915	898	928	782	813	771	826	799	812	789	850
1926-30	859	871	855	952	660	687	650	699	665	673	657	695
1931	853	854	854	971	660	696	632	709	647	672	621	642
1932	853	853	858	953	660	704	633	644	634	642	620	624
1933	870	865	873	1,003	604	640	581	716	609	658	555	670
1934	846	850	837	1,007	537	515	524	529	523	482	523	524

	6-9 Months.				9-12 Months.				Total under 1 Year.			
	England and Wales.	North.	Rest of* England.	Wales.	England and Wales.	North.	Rest of* England.	Wales.	England and Wales.	North.	Rest of* England.	Wales.
1911-15	1,392	—	—	—	1,380	—	—	—	1,218	1,187	1,242	1,273
1916-20	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1921-25	818	834	798	862	842	876	798	909	846	864	836	886
1926-30	698	691	700	719	721	737	716	710	755	764	755	808
1931	666	691	633	696	655	711	613	779	738	756	727	814
1932	619	596	635	600	602	581	613	596	723	723	729	759
1933	584	594	578	658	573	593	577	650	708	720	705	814
1934	500	466	492	445	489	478	479	444	651	632	654	708

* Excluding London Administrative County.

In this table the comparison with 1911-15 is shown up to 1926-30 on the basis of the division previously used, that is to say, the aggregates referred to, other than the Administrative County of London, include in each instance some districts comprising London's

outer ring, but from 1926–30 onwards the new density summary is used. It was pointed out in the Review for 1931 (p. 10) that the effect of the change on infant mortality rates is only of importance for the “other urban districts,” the new aggregate having rates higher than the old, in 1931, by 5 per cent. for the first 4 weeks of life, 3 per cent. at 1–6 months, 8 per cent. at 6–9 months, 7 per cent. at 9–12 months and 5 per cent. for the first year as a whole. This effect, however, is eliminated in Table XI by the change of datum line at 1926–30.

In Greater London and each class of area 1934 rates show a sustained improvement over 1926–30 at 6–12 months. In the large towns and rural districts the degree of recent improvement progressively increases throughout the first year of life.

Table XII compares the extent of decline since 1916–20 at different stages of infancy in the North and in Wales with that in the rest of England, excluding London Administrative County. Mortality during the first 4 weeks has fallen to almost the same extent in the North as in the rest of England, by 15 per cent., but in Wales the improvement up to 1921–25 has not been maintained in more recent years.

The slower decline in Wales than in England of mortality rates at 1–12 months has been pointed out in recent Reviews, but 1934 witnessed a remarkable fall in the Welsh rates, bringing the percentage decrease since 1916–20 to 47 at 1–3 months, 48 at 3–6 months and 56 at 6–12 months.

The analysis of infant deaths by detail of age, initiated in 1905 with distinction of registration counties mainly urban and mainly rural in character, and expanded in 1917 and again in 1931, is given for each region and class of area in Table 13. Distinctions of sex and legitimacy are shown only for England and Wales as a whole, but are available for each of the populations dealt with. Some of the facts and rates applying to the illegitimate will be found in Table 14. The rates per 1,000 live births appear in Table XIII, and as percentages of the England and Wales rate in Table XIV.

The chance of dying within half an hour of birth ranged from 1.1 per 1,000 in North II to 2.0 in the East. This measure is very dependent upon accuracy of certification, which in turn may be correlated with the frequency of the presence of a medical attendant at the birth. When the mortality within the first day as a whole is examined, Wales gives, as in each year since 1927, the highest rate of any of the large regions, the sequence being then as usual from North to South. For the combined mortality from the second to the seventh day Wales II shows the highest rate, 150 per cent. of the rate for England and Wales, followed by Wales I, whilst Greater London gives the lowest ratio, 76 per cent. North I gives the highest rates from the 2nd week onwards. The South-West gives the lowest rates at 1–6 months, the East at 6–9 months and South-East outside Greater London at 9–12 months.

Table XIII.—Infant Mortality at Various Ages, 1934.

Rates per 1,000 Live Births.

	Total under one Year.	Under 30 Minutes.	30 Minutes and under 1 Day.	Total under 1 Day.	Days.						1 Day and under 1 Week.	Weeks.				Total under 4 Weeks.	4 Weeks to 3Months.	Months.		
					1	2	3	4	5	6		0	1	2	3					
England and Wales.																				
All Infants	{ M. 65.4 F. 51.4 P. 58.6	{ 1.8 1.6 1.7	{ 10.3 8.1 9.2	{ 12.1 9.7 10.9	{ 3.9 3.0 3.5	{ 3.6 2.5 3.0	{ 2.7 1.7 2.2	{ 1.5 1.2 1.3	{ 1.0 0.8 0.9	{ 0.8 0.6 0.7	{ 13.6 9.8 11.7	{ 25.6 19.5 22.6	{ 4.3 3.5 3.9	{ 3.0 2.5 2.8	{ 2.3 1.8 2.0	{ 35.2 27.2 31.3	{ 10.1 7.5 8.8	{ 8.3 6.7 7.5	{ 6.4 5.2 5.8	{ 5.4 4.8 5.1
Legitimate	{ M. 63.6 F. 49.9 P. 56.9	{ 1.5 1.2 1.4	{ 10.1 8.0 9.1	{ 11.6 9.2 10.4	{ 3.9 2.9 3.4	{ 3.6 2.4 3.0	{ 2.6 1.7 2.1	{ 1.5 1.1 1.3	{ 1.0 0.8 0.9	{ 0.8 0.6 0.7	{ 13.3 9.6 11.5	{ 24.9 18.8 21.9	{ 4.2 3.4 3.8	{ 3.0 2.4 2.7	{ 2.2 1.7 2.0	{ 34.3 26.3 30.4	{ 9.7 7.2 8.5	{ 8.0 6.5 7.3	{ 6.4 5.1 5.7	{ 5.3 4.8 5.1
Illegitimate	{ M. 104.9 F. 85.4 P. 95.4	{ 8.5 9.4 8.9	{ 14.2 10.3 12.3	{ 22.7 19.6 21.2	{ 5.0 4.8 4.9	{ 4.3 3.5 3.9	{ 4.0 2.4 3.2	{ 2.1 2.1 2.1	{ 1.9 1.0 1.4	{ 1.3 0.8 1.0	{ 18.6 14.5 16.6	{ 41.4 34.2 37.9	{ 6.1 5.5 5.8	{ 4.1 4.1 4.1	{ 3.9 3.3 3.6	{ 55.5 47.0 51.4	{ 19.0 14.3 16.7	{ 15.5 11.6 13.6	{ 8.0 7.5 7.7	{ 7.0 4.9 6.0
South-East..	{ .. Greater London .. Remainder of South-East	{ 1.6 1.6 1.7	{ 7.9 8.0 7.7	{ 9.5 9.5 9.4	{ 2.9 3.0 2.8	{ 2.3 2.1 2.4	{ 1.6 1.6 1.7	{ 1.0 0.9 1.0	{ 0.7 0.7 0.8	{ 0.6 0.5 0.6	{ 9.0 8.9 9.3	{ 18.5 18.4 18.7	{ 3.0 2.7 3.4	{ 2.0 1.8 2.2	{ 1.7 1.7 1.6	{ 25.1 24.7 25.8	{ 8.6 10.0 6.6	{ 7.8 9.6 5.1	{ 5.7 7.0 3.8	{ 4.8 6.0 3.0
North ..	{ .. North I .. " II .. " III .. " IV ..	{ 1.7 1.8 1.1 1.5 1.9	{ 10.1 10.1 9.2 10.1 10.3	{ 11.8 11.9 10.3 11.5 12.2	{ 3.8 3.7 2.9 4.3 3.8	{ 3.5 3.6 4.0 3.4 3.4	{ 2.5 2.7 2.6 2.6 2.4	{ 1.6 1.4 1.6 1.7 1.6	{ 1.1 1.2 1.0 1.2 1.0	{ 0.8 0.7 1.1 0.8 0.9	{ 13.4 13.3 13.4 13.9 13.1	{ 25.1 25.2 23.7 25.4 25.3	{ 4.6 6.2 3.5 3.9 4.5	{ 3.5 4.9 3.0 2.8 3.4	{ 2.4 3.4 2.2 2.0 2.2	{ 35.6 39.7 32.4 34.2 35.3	{ 9.7 11.7 8.5 8.0 10.0	{ 8.3 10.5 7.7 6.3 8.6	{ 6.8 7.8 6.9 5.7 6.9	{ 6.2 7.9 5.7 5.2 6.2
Midland ..	{ .. Midland I .. " II ..	{ 1.8 1.8 1.9	{ 9.7 9.9 9.2	{ 11.5 11.8 11.0	{ 3.4 3.3 3.6	{ 3.1 3.1 3.0	{ 2.3 2.2 2.4	{ 1.5 1.4 1.7	{ 1.0 1.2 0.6	{ 0.7 0.7 0.6	{ 11.9 11.9 11.9	{ 23.4 23.7 22.9	{ 4.1 4.1 4.0	{ 2.6 2.7 2.3	{ 1.9 1.9 2.0	{ 32.0 32.4 31.2	{ 8.5 9.1 7.5	{ 7.1 7.4 6.4	{ 5.6 6.0 4.8	{ 4.5 4.8 4.0
East ..	{ .. South-West ..	{ 2.0 1.6	{ 8.6 8.5	{ 10.6 10.1	{ 3.5 3.5	{ 3.1 3.2	{ 2.0 2.4	{ 1.0 1.4	{ 0.8 0.8	{ 0.6 0.9	{ 11.0 12.0	{ 21.6 22.2	{ 3.9 3.8	{ 3.1 2.7	{ 1.8 2.3	{ 30.4 30.9	{ 6.7 6.5	{ 4.8 4.7	{ 3.4 3.9	{ 4.0 3.4
Wales ..	{ .. Wales I .. " II ..	{ 1.4 1.5 1.2	{ 11.1 11.7 9.4	{ 12.5 13.1 10.6	{ 4.9 4.7 5.5	{ 4.1 4.1 3.9	{ 2.9 2.8 3.5	{ 1.9 1.9 2.0	{ 1.3 1.3 1.5	{ 1.0 0.9 1.2	{ 16.1 15.7 17.6	{ 28.7 28.8 28.2	{ 4.2 4.5 3.2	{ 3.3 3.3 3.2	{ 2.3 2.4 1.9	{ 38.3 39.0 36.4	{ 9.2 9.1 9.3	{ 7.5 7.3 7.8	{ 5.1 5.0 5.3	{ 4.5 4.7 3.7
County Boroughs* Other Urban Districts* Rural Districts* ..	{	{ 1.7 1.6 1.8	{ 10.0 9.6 8.6	{ 11.8 11.2 10.4	{ 3.7 3.6 3.4	{ 3.3 3.2 3.3	{ 2.2 2.3 2.6	{ 1.4 1.4 1.6	{ 1.0 1.0 1.0	{ 0.8 0.9 0.7	{ 12.3 12.4 12.6	{ 24.1 23.5 23.0	{ 4.3 4.3 3.7	{ 3.1 2.9 3.0	{ 2.2 2.0 2.0	{ 33.7 32.7 31.7	{ 10.1 7.4 7.6	{ 8.5 6.2 5.6	{ 7.0 4.7 4.2	{ 6.2 4.1 3.8

* Excluding Greater London.

Table XIV.—Infant Mortality at various Ages, in different parts of the Country, per cent. of that of all Infants of the same Age in England and Wales, 1934.

	Total under one Year.	Under 30 Minutes.	30 Minutes and under 1 Day.	Total under 1 Day.	Days.						1 Day and under 1 Week.	Weeks.			Total under 4 Weeks.	4 Weeks to 3Months.	Months.			
					1	2	3	4	5	6		0	1	2			3			
England and Wales { P. M. F.	100 112 88	100 106 94	100 112 88	100 111 89	100 111 86	100 120 83	100 123 77	100 115 92	100 111 89	100 114 86	100 116 84	100 113 86	100 110 90	100 107 89	100 115 90	100 112 87	100 115 85	100 111 89	100 110 90	100 106 94
South-East.. Greater London Remainder of South-East	89 98 76	94 94 100	86 87 84	87 87 86	83 86 80	77 70 80	73 73 77	77 69 77	78 78 89	86 71 86	77 76 79	82 81 83	77 69 87	71 64 79	85 85 80	80 79 82	98 114 75	104 128 68	98 121 66	94 118 59
North .. North I .. " II .. " III .. " IV ..	113 132 104 101 115	100 106 65 88 112	110 110 100 110 112	108 109 94 106 112	109 106 83 123 109	117 120 133 113 113	114 123 118 109 113	123 108 123 131 123	122 133 111 133 111	114 100 157 114 129	115 114 115 119 112	111 112 105 112 112	118 159 90 100 115	125 175 107 100 121	120 170 110 100 110	114 127 104 109 113	110 133 97 91 114	111 140 103 84 115	117 134 119 98 119	122 155 112 102 122
Midland .. Midland I .. " II .. East .. South-West .. Wales .. Wales I .. " II ..	98 102 92 84 84 110 111 106	106 106 112 118 94 82 88 71	105 108 100 93 92 121 127 102	106 108 101 97 93 115 120 97	97 94 103 100 100 140 134 157	103 103 100 103 107 137 137 130	105 100 109 91 109 132 127 159	115 108 131 77 108 146 146 154	111 133 67 89 89 144 144 167	100 100 86 86 129 143 129 171	102 102 102 94 103 138 134 150	104 105 101 96 98 127 127 125	105 105 103 100 97 115 118 82	93 96 82 111 96 115 114	95 95 100 90 115 115 120 95	102 104 100 97 99 122 125 116	97 103 85 76 74 105 103 106	64 59 67 67 88 86 91	59 78 67 67 88 92 73	78 88 94 78 88 92 73
County Boroughs* Other Urban Districts* Rural Districts* ..	112 94 90	100 94 106	109 104 93	108 103 95	106 103 97	110 107 110	100 105 118	108 108 123	111 111 111	114 129 100	105 106 108	107 104 102	110 110 95	111 104 107	110 100 100	108 104 101	115 84 86	113 83 75	121 81 72	122 80 75

* Excluding Greater London.

Urban mortality excess is not, as a rule, present from birth, but tends to increase throughout the later months of infancy. This is shown in 1934 by the fact that the divergence between the county boroughs and rural districts increases from 7 per cent. of the rate for England and Wales at 0-4 weeks to 29 at 1-3 months, 38 at 3-6 months, 49 per cent. at 6-9 months and 47 per cent. at 9-12 months.

Table XV.—Mortality of the first 30 Minutes of Life 1934.

International List Numbers.	Cause of Death.	All Infants.	Under 30 Minutes.						
			Legitimate.			Illegitimate.			
			Males.	Fe- males.	Both Sexes.	Males.	Fe- males.	Both Sexes.	
			Deaths.						
86	Convulsions	—	—	—	—	—	—	—	
157	Congenital malformations	83	35	41	76	2	5	7	
158	Congenital debility	39	20	19	39	—	—	—	
159	Premature birth	395	220	146	366	14	15	29	
160	Injury at birth.. ..	156	84	59	143	6	7	13	
161 (a)	Atelectasis	96	51	40	91	5	—	5	
161 (b&c)	Other diseases peculiar to early infancy	6	3	3	6	—	—	—	
172-175	Homicide	16	—	1	1	6	9	15	
182	Accidental suffocation.. ..	1	1	—	1	—	—	—	
194: 1	Lack of care	168	19	26	45	60	63	123	
	Other forms of violence	27	—	1	1	14	12	26	
	<i>Violence and lack of care</i>	212	20	28	48	80	84	164	
	Other Causes	16	3	1	4	5	7	12	
	All Causes	1,003	436	337	773	112	118	230	
			Mortality per Million Live Births.						
86	Convulsions	—	—	—	—	—	—	—	
157	Congenital malformations	139	119	147	133	151	397	271	
158	Congenital debility	65	68	68	68	—	—	—	
159	Premature birth	661	749	525	640	1,060	1,192	1,125	
160	Injury at birth.. ..	261	286	212	250	454	556	504	
161 (a)	Atelectasis	161	174	144	159	379	—	194	
161 (b&c)	Other diseases peculiar to early infancy	10	10	11	10	—	—	—	
172-175	Homicide	27	—	4	2	454	715	582	
182	Accidental suffocation.. ..	2	3	—	2	—	—	—	
194: 1	Lack of care	281	65	93	79	4,545	5,007	4,770	
	Other forms of violence	45	—	4	2	1,060	954	1,008	
	<i>Violence and lack of care</i>	355	68	101	84	6,060	6,676	6,360	
	Other causes	27	10	4	7	379	556	465	
	All Causes	1,678	1,485	1,211	1,352	8,484	9,378	8,920	
			Percentage of Total under 24 Hours.						
86	Convulsions	—	—	—	—	—	—	—	
157	Congenital malformations	17	15	17	16	22	56	39	
158	Congenital debility	16	14	18	16	—	—	—	
159	Premature birth	9	9	9	9	9	15	11	
160	Injury at birth.. ..	28	27	26	27	50	35	41	
161 (a)	Atelectasis	17	18	16	17	33	—	20	
161 (b&c)	Other diseases peculiar to early infancy	13	11	16	13	—	—	—	
172-175	Homicide	73	—	100	100	67	75	71	
182	Accidental suffocation.. ..	7	13	—	8	—	—	—	
194: 1	Lack of care	88	76	81	79	95	89	92	
	Other forms of violence	77	—	33	20	93	80	87	
	<i>Violence and lack of care</i>	81	57	68	63	92	86	89	
	Other causes	31	19	5	11	71	78	75	
	All Causes	15	13	13	13	37	48	42	

Comparison of Table XIII with 1933 reveals decreases in the rates for the first month of life in each region except North I, East, South-West and Wales II, at the 2nd and 3rd months except in Greater London and North I, at 3-9 months except in Greater London, and at 9-12 months except in Greater London, North I and the South-West.

Deaths occurring immediately after birth.—The separate tabulation of deaths registered as occurring within 30 minutes of birth according to sex, cause and legitimacy, first published in the Review for 1928, is repeated for 1934 in Table XV.

This very early mortality displays the same startling differential incidence upon the illegitimate as in previous years, especially for those causes of death which imply, or are likely to mask, violence or neglect. For violence and lack of care as a whole a rate of 6,360 per million for illegitimate infants compares with one of 84 for the legitimate. Moreover, 81 per cent. of all such deaths under 24 hours occurred within this first half-hour, as against 15 per cent. for mortality generally, so that the risk represented by violence and lack of care is one applying especially to this first half-hour of life. The rate of mortality among legitimate infants from all causes was 1,485 per million live born males and 1,211 for females, the corresponding rates in the preceding 5-year period being 1,421 and 1,243 respectively. The female excess of deaths during the first half-hour which were classed to congenital malformations, noticeable in the years 1931-33, and the male excess of deaths classed to injury at birth were not so pronounced in 1934. The rates per million live births in each triennium 1928-30 and 1931-33 and for 1934 from various causes are given below.

Legitimate Infants.	Males.			Females.		
	1928-30.	1931-33.	1934.	1928-30.	1931-33.	1934.
Congenital malformations	90	83	119	93	154	147
Congenital debility ..	87	85	68	62	56	68
Premature birth.. ..	700	715	749	583	570	525
Injury at birth	262	297	286	235	211	212
Atelectasis	148	192	174	145	161	144
Other diseases of early infancy	7	8	10	3	11	11

Of the 164 deaths of illegitimate infants assigned to violence and lack of care 108 or 66 per cent. relate to abandoned infants of unknown parentage.

Causes of Infant Mortality.—The causes of infant mortality are set forth in Tables 11–15, which compare the records of 1934 with those of previous years, and show the incidence of mortality from each cause upon infants distinguished by sex, age, legitimacy, class of area, and section of the country. From these tables has been prepared the comparison in Table XVI between the mortality from the chief causes distinguished at various ages in 1934 and 1929–33, and from all causes in 1934 and 1933.

Table XVI.—Comparison of Infant Mortality Rates (per 100,000 Live Births) in 1934 with those of immediately preceding years.

	Under 4 Weeks.	4 Weeks to 3 Months.	3-6 Months.	6-9 Months.	9-12 Months.	Under 1 Year.	Under 4 Weeks.	4 Weeks to 3 Months.	3-6 Months.	6-9 Months.	9-12 Months.	Under 1 Year.
	Increase or Decrease from Various Causes as compared with 1929-33.						Percentage Increase or Decrease as compared with 1929-33.					
Measles (7)	—	—	+ 1	+ 2	+ 4	+ 7	—	—	+13	+ 6	+ 6	+ 7
Whooping cough (9) ..	— 2	— 8	—13	—22	— 30	— 76	—33	—19	—25	—36	—46	—33
Influenza (11)	— 3	— 9	—10	—13	— 12	— 48	—43	—64	—59	—65	—67	—63
Tuberculosis, all forms (23-32)	— 1	— 3	— 5	—11	— 8	— 27	*	—43	—21	—34	—24	—28
Convulsions (86)	—17	—14	— 3	— 6	—	— 41	—15	—34	—10	—29	—	—19
Bronchitis and pneumonia (106-109)	—31	—58	—72	—88	— 90	—339	—24	—20	—21	—28	—31	—25
Diarrhoea and enteritis (119)	— 6	—31	—34	—25	— 17	—112	—10	—19	—18	—22	—25	—19
Developmental and wasting diseases (157 159, 161 a, b)	— 6	—40	—17	— 9	— 5	— 78	—	—11	—16	—25	—25	— 3
<i>Congenital defects (malfor- mations and atelectasis)</i> (157, 161a)	+64	+ 5	+ 2	— 2	— 1	+ 69	+13	+ 4	+ 4	— 9	— 8	+10
<i>Congenital debility and icterus (158, 161b)</i> ..	—31	—21	—18	— 5	— 4	— 80	—13	—24	—40	—42	—67	—21
Premature birth (159) ..	—40	—24	— 2	— 1	—	— 67	— 2	—17	—15	—50	—	— 4
Injury at birth (160) ..	+16	—	—	—	—	+ 17	+ 8	—	*	*	*	+ 8
Suffocation—in bed or not stated how (182 part) ..	— 5	—	— 2	—	—	— 8	—24	—	—18	—	—	—16
Other causes.. .. .	+ 4	—13	— 4	— 3	—11	— 28	+ 2	—11	— 3	— 3	—10	— 4
All Causes	—51	—175	—162	—174	—171	—733	— 2	—17	—18	—23	—25	—11
	Increase or Decrease of Mortality in 1934 as compared with 1933.						Increase or Decrease of Mortality in 1934 per cent. of that in 1933.					
All Causes	—89	—111	—123	—98	— 88	—509	— 3	—11	—14	—14	—15	— 8

Note.—The percentages in this Table being based on rates per 100,000 live births may differ on this account from those derivable from the rates in Table VIII.

* Numbers too small to provide significant comparison.

The decrease from the previous year is seen to have applied to each period of age. The same is true when comparison is made with the average rates for the preceding five years, the extent of the decline amounting to over 20 per cent. at 6–12 months. Mortality of infants from measles was above the 5-year average at each age over 3 months. Deaths attributed to congenital defects and injury at birth per 1,000 live births have progressively increased since 1923, their rate in 1934 again being the highest recorded in Table 12. Mortality from premature birth, which has since 1922 risen and fallen each year with the influenza rate, was lower than in the three preceding years. Arranging the 13 years 1922–34 in ascending order

of their infant mortality from influenza, the following correspondence is found between the rates per 100,000 live births from these causes.

No. of years.	Influenza.	Premature Birth.
6	20 to 58	1749 to 1768
2	69, 81	1820, 1830
5	89 to 125	1855 to 1882

The rates for tuberculosis, syphilis, convulsions, bronchitis, respiratory disease other than bronchitis or pneumonia, inflammation of the stomach, diarrhoea, hernia, congenital debility and suffocation in bed established new low records in 1934, whilst those for diphtheria and meningitis were equal to the lowest previously recorded. Whooping cough, influenza and pneumonia reached the lowest levels save in 1930 (Table 12).

Table XVII.—Infant Mortality by Cause, Sex and Legitimacy, 1934.

		Deaths per 1,000 Live Births.						Mortality per cent.				
		All Infants.		Legitimate Infants.		Illegitimate Infants.		Male of Female Infants.			Illegitimate of Legitimate Infants.	
		Male.	Fe- male.	Male.	Fe- male.	Male.	Fe- male.	All In- fants.	Legiti- mate.	Illegi- timate.	Male.	Fe- male.
All Causes.	Under four weeks ..	35·20	27·20	34·29	26·30	55·52	47·05	129	130	118	162	179
	4 weeks–3 months ..	10·07	7·50	9·66	7·20	19·01	14·31	134	134	133	197	199
	3–6 months ..	8·30	6·74	7·97	6·52	15·45	11·60	123	122	133	194	178
	6–9 „ ..	6·43	5·18	6·36	5·07	7·95	7·47	124	125	106	125	147
	9–12 „ ..	5·37	4·82	5·30	4·81	6·97	4·93	111	110	141	132	102
	Total under 1 year	65·37	51·44	63·59	49·90	104·91	85·35	127	127	123	165	171
All Ages under one Year.	Measles (7) ..	1·19	1·07	1·17	1·06	1·51	1·35	111	110	112	129	127
	Whooping cough (9)	1·28	1·75	1·27	1·74	1·44	1·99	73	73	72	113	114
	Tuberculosis, all forms (23–32) ..	0·79	0·59	0·77	0·59	1·14	0·48	134	131	238	148	81
	Syphilis (34) ..	0·35	0·32	0·31	0·27	1·21	1·35	109	115	90	390	500
	Convulsions (86) ..	2·15	1·43	2·11	1·39	3·03	2·30	150	152	132	144	165
	Bronchitis and pneumonia (106–109) ..	11·52	8·92	11·33	8·77	15·68	12·08	129	129	130	138	138
	Diarrhoea and enteritis (119) ..	5·55	4·08	5·24	3·83	12·50	9·62	136	137	130	239	251
	Developmental and wasting diseases (157–159, 161a & b)	31·89	25·13	31·25	24·61	46·05	36·72	127	127	125	147	149
	Congenital defects (malformations and atelectasis) (157, 161a) ..	8·60	7·16	8·56	7·17	9·40	6·83	120	119	138	110	95
	Congenital debility, sclerema and icterus (158, 161b)	3·75	2·43	3·64	2·36	6·21	3·74	154	154	166	171	158
	Premature birth (159)	19·54	15·56	19·05	15·08	30·45	26·15	126	126	116	160	173
	Other causes ..	10·65	8·15	10·14	7·64	22·35	19·46	131	133	115	220	255
	All causes ..	65·37	51·44	63·59	49·90	104·91	85·35	127	127	123	165	171

Table XVII contrasts the mortality of male with that of female, and of legitimate with that of illegitimate, infants. The sex ratio of mortality was 127, the lowest ratio recorded since 1911–20, a maximal ratio of 133 having been reached in 1930, followed by a decline in each year since (see Table XVI and Diagram 1 of Review

for 1932). This low ratio of male to female deaths was particularly evident at 3-6 and 9-12 months, and, amongst the causes distinguished, for whooping cough and the developmental and wasting diseases. Male excess ranges from 9 per cent. for syphilis to 54 for the congenital debility group. The excess mortality of the illegitimate is, as usual, very much greater for syphilis than for any other cause distinguished in the table.

Distribution throughout the country of Infant Mortality from various causes.—Table XVIII, which is derived from Table 15, furnishes an analysis by cause of the differences in total mortality under one year of age shown in Table XIII.

Table XVIII.—Comparison of Infant Mortality from the Principal Causes in Geographical Regions, 1934.

	Measles (7).	Whooping cough (9).	Tuberculosis, all forms (23-32).	Syphilis (34).	Convulsions (86).	Bronchitis and pneumonia (106-109).	Diarrhoea and enteritis (119).	Congenital malformations (157).	Congenital debility (158).	Premature birth (159).	Injury at birth (160).	Suffocation—in bed, or not stated how (182 pt.).	Other Causes.	All Causes.
Differences from Rates for England and Wales per 100,000 Live Births.														
South-East	+19	-26	-11	-3	-124	-10	+96	-66	-61	-392	+1	-4	-70	-651
Greater London ..	+70	-10	-20	+2	-137	+204	+307	-64	-78	-386	+8	-14	-22	-140
Remainder of South-East	-58	-50	+3	-12	-105	-337	-225	-69	-36	-400	-11	+12	-145	-1,433
North	+43	-3	+13	+9	+66	+174	+21	+33	+71	+240	+5	+6	+117	+795
North I	+46	+41	+31	+51	+217	+576	+146	+50	+147	+415	+10	-4	+171	+1,897
" II	+84	-38	+11	-15	+88	+69	-71	+23	+55	+61	-22	+5	+6	+256
" III	+62	-46	-16	+3	+29	-59	-106	+27	+2	+90	+13	+13	+70	+82
" IV	+22	+11	+21	—	+17	+156	+61	+31	+80	+292	+4	+6	+149	+850
Midland	-51	+41	-2	—	-22	-105	-52	+14	-23	+148	-9	+2	-27	-86
Midland I	-52	+68	-8	+4	-47	-63	+6	+25	-32	+178	+20	-7	+18	+110
" II	-49	-14	+9	-9	+27	-190	-167	-9	-6	+87	-65	+20	-109	-475
East	-58	+8	+9	-12	+16	-368	-255	+15	-37	-105	-45	-9	-83	-924
South-West	-60	-12	-5	-13	-20	-344	-263	+82	-70	-81	+31	-13	-148	-916
Wales	-95	+32	-6	-16	+328	-64	-84	+40	+75	+397	—	+3	-17	+593
Wales I	-96	-5	-6	-24	+321	-46	-82	+98	+47	+434	-11	-5	+36	+661
" II	-93	+144	-8	+7	+349	-120	-87	-138	+162	+284	+31	+29	-175	+385

Rates per cent. of those for England and Wales.

South-East	117	83	84	91	31	99	120	89	76	78	100	90	92	89
Greater London ..	162	93	71	106	24	120	163	89	69	78	103	67	98	98
Remainder of South-East	49	67	104	65	42	67	54	89	86	77	95	129	84	76
North	138	98	119	126	137	117	104	105	128	114	102	114	113	114
North I	141	127	145	250	221	156	130	108	158	124	104	90	119	132
" II	174	75	116	56	149	107	85	104	122	103	91	112	101	104
" III	155	70	77	109	116	94	78	104	101	105	106	131	108	101
" IV	119	107	130	100	109	115	113	105	131	117	102	114	116	115
Midland	55	127	97	100	88	90	89	102	91	108	96	105	97	99
Midland I	54	145	88	112	74	94	101	104	87	110	109	83	102	102
" II	57	91	113	74	115	81	65	99	98	105	72	148	88	92
East	49	105	113	65	109	64	47	102	85	94	81	79	91	84
South-West	47	92	93	62	89	66	46	114	73	95	113	69	84	84
Wales	16	121	91	53	282	94	83	107	129	123	100	107	98	110
Wales I	15	97	91	29	278	96	83	116	118	125	95	88	104	111
" II	18	195	88	121	294	88	82	77	164	116	113	169	81	107

The greatest departures from the average mortality of the whole country in Table 15 are furnished on the one side by

North I, which shows excesses under every one of the causes distinguished, except suffocation, producing a net excess of 18·97 deaths per 1,000 live births over the average for England and Wales; and on the other by the South-East excluding Greater London, with comparatively favourable experience under every head distinguished except suffocation and tuberculosis, yielding a total rate 14·33 lower than the general average.

As usual, three causes contribute more than any other to these differences, the three being bronchitis and pneumonia, premature birth, and diarrhoea. The predominant influence of these causes in determining local variations of infant mortality has been evident in each of the last twelve years. Jointly they account in 1934 for 60 per cent. of the divergence above the mean in North I, and for 67 per cent. of the divergence below the mean in the South-East excluding Greater London.

Mortality from *bronchitis and pneumonia* (considered jointly because of evidence of interchangeability between these forms of return) shows the usual excess in the North of England, amounting to 56 per cent. in North I, 15 in North IV and 7 in North II. In contrast with this the Eastern counties show a rate 36 per cent., the South-West 34 and the South-East outside Greater London 33 per cent. below the mean. Urbanization also is associated with a higher rate for this as for most other forms of infant mortality and Greater London, in great contrast to 1933, gave a rate 20 per cent. above that in England and Wales.

The next chief cause of local differences in infant mortality, *premature birth*, is more closely associated with geographical position than with urbanization, the range being from 125 per cent. of the general average for Wales I and 124 for North I, to 78 per cent. for Greater London and 77 for the remainder of the South-East.

Mortality from *diarrhoea* increases from South to North, as usual, but this sequence is profoundly modified by the extent of urbanization. In London the 1934 rate was 12·01 per 1,000 live births, in the outer ring 3·99, the county boroughs 5·63, other urban districts 3·24, and rural districts 2·68. For London the relation between diarrhoea rate and the summer temperature is shown by the fact that 1921, 1926, 1929, 1932, 1933 and 1934, the only years since 1920 in which the Greenwich mean temperature for the September quarter reached 63° F. or over, were also the only years in which the London diarrhoea death-rate exceeded 9·8, whilst at the other end of the scale the 4 years with the coolest summer quarters, 1922, 1924, 1927 and 1931, were the only years giving rates below 9 (*see* Table XVIII of Review for 1933).

In 1934, as in the preceding year, North I had the highest rate and the South-West the lowest.

For the first time, save in 1931, more deaths were assigned to *congenital malformation* than to diarrhoea. The former is steadily increasing in importance amongst the causes of infant deaths, its

mortality having risen year by year from 4·16 in 1923 to 6·06 per 1,000 live births in 1934. This increase affects all sections of the population to much the same extent, but mortality in 1934 was highest in Wales I, as in the 3 preceding years, and comparatively low in Wales II, Greater London and the rest of the South-East.

Injury at birth has increased since 1918 without intermission except in 1922. Wales II shows the highest rate in 1934, and the East the lowest.

Congenital debility was, as usual, less frequently returned as a cause of death in Greater London than in any region, and the rate for the county boroughs was considerably less than that for the rural districts during the first four weeks of life. *Convulsions* continued to decline as a registered cause of death, the 1934 rate being only 45 per cent. of that of 10 years earlier. The Greater London rate has fallen from ·98 in 1931 to ·43 in 1934, whereas in Wales the rate is 5·08 and in the North 2·46 per 1,000 live births.

Mortality in the first 24 months of life—Handicap of the Winter-born Child.

In Table XIX the deaths in column (b) are those of children registered as dying during 1931–33, who had completed the number of months of life shown in column (a) but not the next number, the first line representing deaths under 1 month of age, the next line deaths at 1–2 months, and so on up to the end of the second year of life. The calculated births from which these were derived, in column (d), are estimated as follows:—The deaths at 0–1 month of age may be regarded as derived from the births occurring between about mid-December, 1930, to mid-December, 1933, or allowing for the delay in birth registration it may be assumed that they were derived from the births registered from January, 1931, to December, 1933, inclusive, namely 1,826,466. By the same reasoning the deaths at 3–4 months of age may be related to the births registered from October, 1930, to September, 1933, inclusive, namely 1,851,284, and similarly at 6–7, 9–10, 12–13, 15–16, 18–19, and 21–22 months.

Since the births have only been tabulated by quarters, the intervening estimates corresponding to deaths at 1–2, 2–3 months, etc., are arrived at by dividing the differences between the successive numbers at 0–1, 3–4, etc., into three equal parts, which is equivalent to joining the known points for each third month of age by a series of straight lines. The continuous increase noticed on passing down this column is due to the falling birth-rate during 1929 to 1933. The use of a more elaborate method of curve fitting would make little difference to the resulting survivors in column (f), which are calculated by aggregating the deaths out of 10,000 births, given in column (e), down to the required age, and subtracting the totals from 10,000.

DIAGRAM 1. SURVIVORS TO EACH MONTH OF AGE UP TO TWO YEARS AND CHANCE OF DYING WITHIN A MONTH (1931-33).

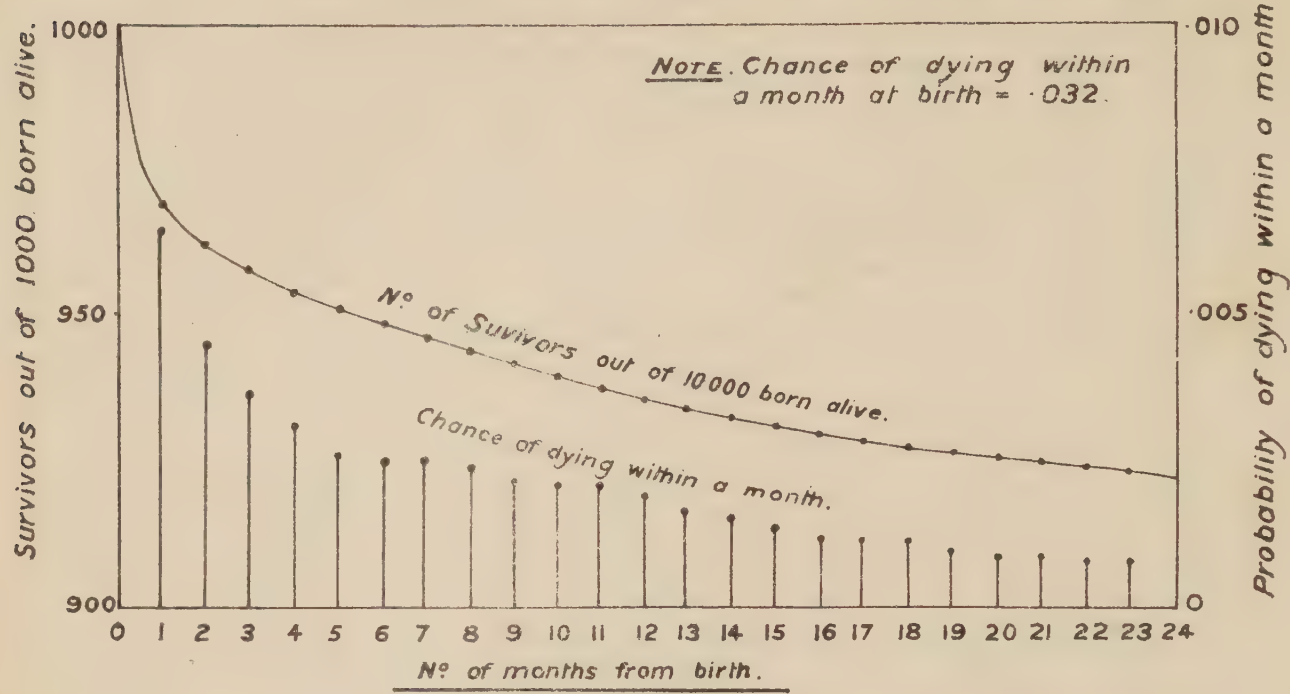
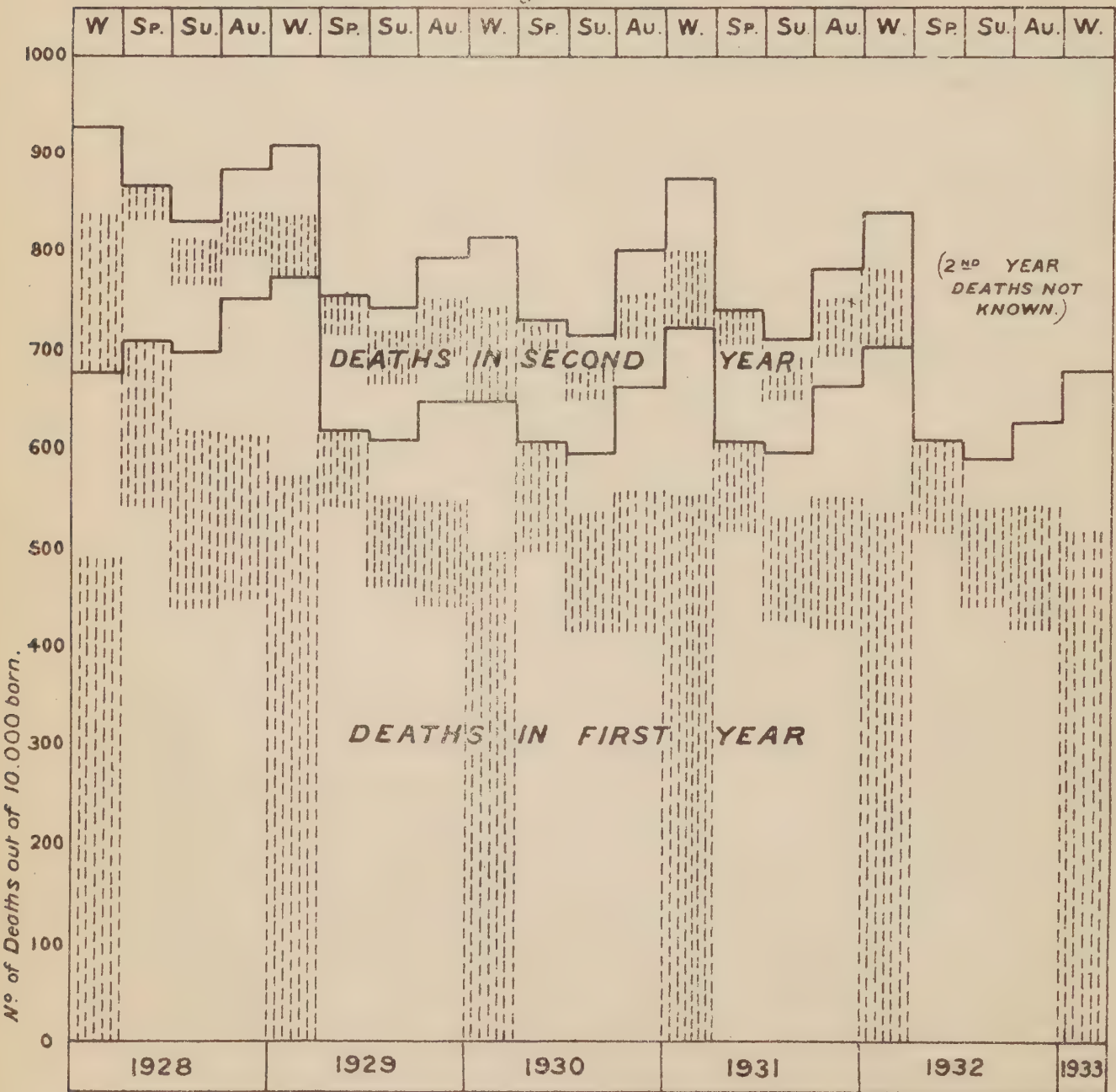


DIAGRAM 2. DEATHS IN THE FIRST AND SECOND YEARS OF LIFE OUT OF 10000 CHILDREN BORN, ACCORDING TO SEASON OF BIRTH.

W. Children born in Winter; Sp, in Spring; Su, in Summer; Au, in Autumn.



NOTE. Shaded areas represent deaths in the March quarters.

Table XIX is given because hitherto no national statistics for England and Wales of deaths by separate months of age during the second year of life have been placed on record. No process of smoothing has here been applied to the deaths, which present in their crude form some irregularities clearly due to chance causes, or errors of statement, such as the dislike of 13 and preference for 18 over 19 months, these irregularities being also reproduced in the last column. In Diagram 1 free-hand curves have been drawn through the points given by columns (f) and (g).

Table XIX.—Deaths at each month of the first two years of life in 1931-33 ; chances of dying and of survival.

Number of completed months of life.	Deaths in 1931-33 of children who had completed this number of months but not the next number.		Estimated number of births from which the deaths in (b) were derived.	Estimated deaths (as in (b)) derived from each 10,000 live births.	Number out of 10,000 born alive who survive exactly the number of months specified in (a).	Estimated chance of dying within a month, after surviving the number of months specified in (a).
	Total.	Males per 100 females.				
a.	b.	c.	d.	e.	f.	g.
0	58,042	138	1,826,466	318	10,000	1 in 31
1	11,333	144	1,834,739	62	9,682	156
2	7,948	144	1,843,012	43	9,620	224
3	6,398	141	1,851,284	35	9,577	274
4	5,496	140	1,857,163	30	9,542	318
5	4,709	135	1,863,042	25	9,512	380
6	4,496	138	1,868,921	24	9,487	395
7	4,433	129	1,874,253	24	9,463	394
8	4,337	128	1,879,585	23	9,439	410
9	3,996	133	1,884,916	21	9,416	448
10	3,777	127	1,888,232	20	9,395	470
11	3,867	121	1,891,548	20	9,375	469
12	3,504	124	1,894,864	18	9,355	520
13	2,822	114	1,898,241	15	9,337	622
14	2,717	125	1,901,618	14	9,322	666
15	2,374	112	1,904,995	12	9,308	776
16	2,169	116	1,907,525	11	9,296	845
17	2,020	111	1,910,055	11	9,285	844
18	2,177	119	1,912,586	11	9,274	843
19	1,640	111	1,913,935	9	9,263	1,029
20	1,623	115	1,915,284	8	9,254	1,157
21	1,486	126	1,916,634	8	9,246	1,156
22	1,428	116	1,919,277	7	9,238	1,320
23	1,439	108	1,921,921	7	9,231	1,319
24	—	—	1,924,565	—	9,224	—

Table XX gives the deaths of children, at each 3 months of age up to 2 years, registered in each quarter during the six years 1928-1933. The children dying aged 0-3 months in the first quarter of 1933 may have been born at any time from October, 1932, to March, 1933, inclusive, but would not be drawn equally from the births of these two quarters. The distribution of the first three frequencies in column (b) of Table XIX shows that of each 100 deaths under 3 months of age, 75 would be under 1 month, 15 aged 1-2 months, and 10 aged 2-3 months. By subdividing the 58,042 deaths under 1 month into deaths occurring on the 1st day, 2nd to 4th days, 5th to 7th days, 2nd week, 3rd week and 4th week, it is estimated that 21·6 per cent. of infants dying under 1 month of age were born in the preceding month, or allowing for the slight

Table XX.—Quarterly deaths registered during 1928-33 at 3-monthly ages up to 2 years, and mortality at those ages out of 10,000 children who were born at different seasons of the year.

Year.	Quar-ter.	Mean Air Temp.	Deaths at months of age (all causes).								Number of Live Births registered.	
			0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24		
1927	4th	—	—	—	—	—	—	—	—	—	152,566	
1928	1st	42.6	8,212	1,889	1,729	1,663	—	—	—	—	167,926	
	2nd	50.7	6,707	1,260	1,113	1,204	—	—	—	—	170,997	
	3rd	58.7	5,627	1,268	874	656	—	—	—	—	165,675	
	4th	45.8	7,002	1,668	1,152	936	—	—	—	—	155,669	
1929	1st†	37.5	9,232	2,672	3,007	2,963	2,608	1,874	1,510	1,341	160,047	
	2nd	50.2	6,715	1,322	1,321	1,268	1,120	808	575	461	169,451	
	3rd	60.0	5,877	1,203	908	838	619	467	358	328	163,777	
	4th	46.1	6,753	1,692	1,147	950	706	535	490	336	150,398	
1930	1st	40.7	7,887	1,635	1,376	1,310	1,016	727	667	527	158,545	
	2nd	52.1	6,494	1,132	1,011	1,015	909	639	480	369	170,042	
	3rd	58.7	5,490	932	588	530	464	313	236	197	165,596	
	4th	45.2	6,445	1,365	958	740	602	436	374	278	154,628	
1931	1st†	39.4	8,840	2,302	2,059	1,880	1,504	1,015	933	728	159,663	
	2nd	51.7	6,372	1,186	1,118	958	787	555	412	330	163,760	
	3rd	56.8	5,299	905	621	559	405	341	251	201	161,133	
	4th	46.2	6,316	1,505	1,101	918	658	482	393	318	147,525	
1932	1st*	41.1	8,181	1,978	1,688	1,483	1,152	758	671	518	152,116	
	2nd	50.3	6,426	1,182	1,046	1,069	921	660	510	415	165,403	
	3rd	59.8	5,412	1,040	728	596	466	365	305	230	156,186	
	4th	45.6	6,026	1,412	959	707	485	425	325	283	140,267	
1933	1st*	41.0	7,710	1,697	1,568	1,528	1,119	840	691	604	148,597	
	2nd	53.2	5,681	1,016	759	756	623	428	323	266	154,047	
	3rd	62.0	4,984	1,029	728	545	422	313	270	186	147,959	
	4th	43.6	6,076	1,351	891	641	501	381	356	274	129,810	
Period of Birth.			Deaths in successive 3-monthly intervals, out of 10,000 born in the period specified.								Deaths out of 10,000 born.	
											1st year.	2nd year.
Winter, 1927-28	..		493	76	53	57	158†	49	22	20	679	249
Spring, 1928 ..	..		393	75	68	174†	66	27	29	31	710	153
Summer, 1928 ..	..		339	100	181†	76	37	32	40	22	696	131
Autumn, 1928 ..	..		447	169†	84	53	45	46	30	12	753	133
Winter, 1928-29	..		578†	83	57	60	64	40	15	17	778	136
Spring, 1929 ..	..		398	72	69	78	54	19	22	44†	617	139
Summer, 1929 ..	..		358	103	84	62	28	27	57†	20	607	132
Autumn, 1929 ..	..		446	107	66	35	39	66†	27	13	654	145
Winter, 1929-30	..		500	72	37	47	95†	35	16	20	656	166
Spring, 1930 ..	..		384	56	57	112†	47	20	23	31*	609	121
Summer, 1930 ..	..		331	82	124†	58	24	29	40*	25	595	118
Autumn, 1930 ..	..		414	147†	71	36	42	48*	32	15	668	137
Winter, 1930-31	..		555†	75	39	58	73*	42	19	18	727	152
Spring, 1931 ..	..		390	56	68	91*	57	22	20	37*	605	136
Summer, 1931 ..	..		328	93	105*	66	29	26	43*	17	592	115
Autumn, 1931 ..	..		425	131*	70	40	32	56*	21	12	666	121
Winter, 1931-32	..		539*	78	48	47	74*	28	18	18	712	138
Spring, 1932 ..	..		391	64	59	94*	38	19	22	—	608	—
Summer, 1932 ..	..		345	90	100*	48	27	24	—	—	583	—
Autumn, 1932 ..	..		425	118*	53	38	35	—	—	—	634	—
Winter, 1932-33	..		521*	69	49	44	—	—	—	—	683	—
Mean 1928-31	Winter ..		532	77	47	56	98	42	18	19	711	176
	Spring ..		391	65	66	114	56	22	24	36	635	137
	Summer ..		339	94	124	65	30	29	45	21	623	124
	Autumn ..		433	139	73	41	40	54	27	13	685	134

† Influenza epidemic and cold winter quarter (below 40° F.)

* Influenza epidemic.

delay in death registration, approximately one quarter of the infants *registered in a given month* as dying under 1 month of age were born in the preceding month and three quarters in the month of death.

It follows that of each 100 children dying under 3 months of age in the 3rd quarter about 2 will have been born in April, 6 in May, 15 in June, 32 in July, 27 in August and 18 in September. Allowing for an average delay of about a month between a birth and its registration in all cases where the infant survived a month, this means that of *deaths at ages 0-3 months in a given quarter* about one-twelfth would be of children whose births were registered in the preceding quarter, and the rest would be of children whose births were registered in the quarter of death. The registered births being known for each quarter, by applying the above weights, the calculated births from which deaths at 0-3 months in the 3rd quarter of 1931 were derived would be 161,352 and the mortality rate in that quarter at ages under 3 months, per 10,000 born, is 5,299 divided by 16.135, or 328 as stated in Table XX.

Deaths at 3-6 months of age are seen from column (b), Table XIX, to consist of 39 per cent. at age 3 months, 33 per cent. at 4 months and 28 per cent. at 5 months, and at 6-9, 9-12 and succeeding 3-month periods the ages at death are distributed over the 3 successive months in approximate proportions 35, 33 and 32 per cent. After allowing for a month's delay in birth registration, the resulting weights calculated from these two distributions are approximately the same. Thus, of *deaths at ages 3-6 months in a given quarter*, approximately three quarters would be of children whose births were registered in the quarter preceding the death, one fifth of children whose births were registered in the quarter before that and one twentieth of children whose births were registered in the quarter when death occurred. For *deaths at 6-9 months* the same fractions are to be applied to the births one quarter further back, *and so on*.

Thus the mortality rates, per 10,000 born alive, at 3-6 months of age in the 4th quarter of 1931, at 6-9 months in the 1st quarter of 1932, and so along the diagonal in the upper part of Table XX are found by dividing 1,505, 1,688, 1,069, etc., by $(.2 \times 161,133) + (.75 \times 147,525) + (.05 \times 152,116) = 150,476$. These rates are the numbers of children dying in successive quarters of a year, starting from birth, out of 10,000 born alive during the months April to September, 1931, and since the bulk of them were born from June to September they may be spoken of as "summer-born children of 1931," those contributing the deaths along the next diagonal as the "autumn-born children of 1931," and so on. In the lower section of Table XX, the mortality suffered in the first 8 quarterly periods of a year from birth by each successive group of 10,000 children from the winter-born of 1927-28 to the winter-born of 1931-32 is set out along each horizontal line, and in the last 2 columns and in Diagram 2 are shown their total mortalities in the 1st and 2nd years of life.

There was a great disadvantage in survival to the end of the 2nd year for children born in the winter months compared with those born at other seasons. Despite the fact that each group of children has, by the end of 2 years from birth, passed twice through a complete round of the seasons, out of each 10,000 children born in the four winters of 1928 to 1931, an average of 887 died within 2 years, for those born in spring the corresponding rate was 772, in summer 747 and in autumn 819 (Table XX, last four lines). This handicap for the winter-born children is revealed by the height of the columns in Diagram 2, and it is contributed to by the mortality of the 2nd year as well as of the first. The average rates per 10,000 for the first year, given at the foot of Table XX, showed 14 per cent. excess for the winter-born over the summer-born, which is equivalent to a difference of 9 in the infant mortality rate. For the second year the excess was 42 per cent., the handicap in the second year being relatively much greater, though absolutely less important than in the first year.

The handicap of the winter-born children in comparison with the summer-born arises, of course, from the fact that they experience the harder conditions of each successive winter at an age half a year younger, namely at 0-3 and 12-15 months instead of at 6-9 and 18-21 months. Moreover, so long as the death-rate is declining with advancing age, each winter will continue to take a greater toll of the winter-born children than of the summer-born of the same age last birthday, since there is a greater gross mortality to be

Table XXI.—Mortality at 3-monthly ages up to two years, during the March quarters, 1924-33.

Year.	Influenza deaths (all ages).	Mean Air Temperature ° F.	Number dying in the March quarter at age specified out of 10,000 originally born alive.							
			0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24

March quarters in order of increasing mean air temperature.

1929 ..	23,927	37.5	578	169	181	174	158	120	92	79
1931 ..	9,448	39.4	555	147	124	112	95	66	57	44
1924 ..	12,803	39.5	571	155	147	140	122	88	72	57
1930 ..	2,208	40.7	500	107	84	78	64	46	40	31
1933 ..	19,849	41.0	521	118	100	94	74	56	43	37
1932 ..	9,176	41.1	539	131	105	91	73	48	40	31
1925 ..	7,614	41.6	517	132	116	111	88	66	48	40
1927 ..	17,944	42.0	537	153	146	146	120	91	67	56
1928 ..	3,231	42.6	493	121	105	98	81	57	43	34
1926 ..	2,914	42.9	500	130	112	107	91	65	53	38

March quarters in order of decreasing influenza deaths (at all ages).

1924, 1927, 1929, 1933	Over 12,000	40.0	552	149	144	139	119	89	69	57
1925, 1931, 1932										
1926, 1928, 1930	7,000-10,000	40.7	537	137	115	105	85	60	48	38
	Under 4,000	42.1	498	119	100	94	79	56	45	34

influenced by the unfavourable conditions. Table XXX of the Review for 1933 showed that the death-rate ceases to fall after 11 years, and presumably this handicap must continue to accumulate up to that age, after which the position will be reversed, and as the death-rate then rises the winter-born will each year be at a slight advantage and will gradually regain what they have lost.

Table IV and its predecessors show that the bulk of the annual variation in infant mortality is caused by the March quarters. The importance of the coldness of this quarter, and of the presence or absence of an influenza epidemic, may be ascertained from Table XXI, where the 10 March quarters from 1924 to 1933 have been arranged first in order of increasing mean air temperature in England and Wales, and then in groups according to the influenza deaths. It must be remembered that the rates are also influenced by the general downward secular trend of mortality due to other factors.

Since there is a correlation between the influenza and temperature factors in the March quarters (as may be seen from Table LXXXVIII of the Review for 1933), it is necessary to contrast pairs of years having similar influenza prevalence but differing coldness and *vice versa*. Comparing 1930 with 1926 or 1928, 1933 with 1927, and 1931 with 1932, only in the last of these pairs did the coldest year have the highest mortality rates according to Table XXI, the reverse being true of the others. On the other hand, comparison of adjacent pairs of years in the upper part of the table—that is, quarters of similar coldness—shows that the rates fluctuated with the influenza deaths in almost every instance in passing down the table, except between 1933 and 1925, where the effect of the downward secular trend of rates in the interval counteracts the influenza factor. The extent of the correlation of the rates with influenza prevalence is perceived in the lower part of the table. The relative amount of excess in the epidemic years increases with age up to the end of the second year. It may be inferred from this analysis that a low mean temperature was relatively unimportant as a factor in comparison with influenza prevalence.

Diagram 2 and Table XX show that the freedom from influenza and the mildness of the March quarters of 1928 and 1930 gave a considerable survival advantage at the end of their first year to children born in those winters, compared with the 4 winters when influenza was epidemic, the rates being 679 and 656 compared with 778, 727, 712, 683. The rates for the March quarters only were 493 and 500, compared with 578, 555, 539, 521 in the influenza years. The deaths, per 10,000 born, which occurred in the March quarters are depicted by shaded areas in Diagram 2. The winter-born children of 1927–28 lost their advantage by being exposed to the severe cold and influenza of the March quarter of 1929 at the beginning of their second year, producing the very high mortality rate of 158 in that quarter and 249 for the second year of life. The winter-born children of 1929–30, being exposed in their second year

to the less severe winter and slighter influenza of 1931, maintained their advantage at the end of the second year.

Mortality at Ages over One Year.

Table XXII states the crude and standardized death-rates at all ages for sexes and persons for the whole country, as well as the mortality per million living at different ages, for 1933 and 1934, and in order to provide means of comparison with experience of some ten years back, for 1921–30.

Table XXII.—Mortality from all Causes per Million Population, 1921–30, 1933 and 1934.

	Males.			Females.			Persons.		
	1921–30.	1933.	1934.	1921–30.	1933.	1934.	1921–30.	1933.	1934.
All Ages.									
Crude	12,927	12,948	12,511	11,401	11,711	11,112	12,131	12,304	11,783
Standardized { A ..	11,826	10,920	10,428	9,602	8,809	8,328	10,644	9,794	9,305
{ B ..	12,774	11,874	11,364	10,953	10,162	9,600	11,827	10,976	10,438
0–	25,345	19,876	19,344	20,386	15,829	15,612	22,896	17,879	17,504
5–	2,513	2,268	2,477	2,327	2,120	2,379	2,420	2,194	2,428
10–	1,658	1,481	1,443	1,637	1,375	1,397	1,648	1,429	1,420
15–	2,602	2,552	2,369	2,483	2,270	2,186	2,543	2,411	2,278
20–	3,335	3,285	3,084	3,030	2,922	2,659	3,178	3,100	2,868
25–	3,890	3,507	3,212	3,458	3,208	3,031	3,656	3,353	3,119
35–	6,379	5,714	5,113	4,830	4,635	4,111	5,544	5,130	4,571
45–	11,615	11,676	10,946	8,554	8,332	7,659	10,006	9,879	9,175
55–	24,363	23,733	23,340	18,124	17,300	16,403	21,086	20,327	19,656
65–	59,152	56,715	55,605	46,014	44,009	42,046	51,907	49,698	48,126
75–	136,934	139,423	129,319	114,049	114,443	103,918	123,108	124,354	114,001
85 and upwards	283,060	286,550	256,366	261,506	259,386	230,629	268,676	268,062	238,925

A. English Standard (Population of England and Wales, 1901).
(See page 2.)

B. International Standard.

The mortality of children aged 5–10 was higher than in 1933, but at all other ages distinguished in Table XXII it was lower. At every age-group for males and at every age-group except 5–10 for females mortality was lower than in 1921–30.

The extent of the fall at the various ages can be better appreciated from Table XXIII, in which the mortality in 1933 and 1934 is expressed as a percentage of the rate in the decennium 1921–30, and 1934 mortality is also expressed in terms of that in 1911–14. At “all ages” the standardized rates according to the English standard have declined since 1911–14 by 30 per cent. for males and 32 per cent. for females, and since 1921–30 by 12 and 13 per cent. respectively. The fall is much greater at 0–5 than at any higher age, amounting to about 53 per cent. since 1911–14 and 24 per cent. since 1921–30.

At 5–10 mortality was higher than in any year since 1929 for boys and since 1925 for girls, no improvement being evident over the rates for 1921–30. At 10–15 the decline amounted to about 14 per cent., and at 15–25 to 8 per cent. for males and 12 for females, increasing to maxima at 35–45 of 20 per cent. for males and 15 for females. At 45–85 mortality was about 5 per cent. for males and 9 per cent. for

females below the 1921-30 level, and at 85 and upwards the improvement was rather greater.

Mortality at 75-85 has fluctuated considerably during the last 15 years without showing any progressive improvement. These fluctuations have been mainly governed by the occurrence of influenza epidemics, as may be seen from the fact that in the 7 years with an influenza crude death-rate below $\cdot 3$ per 1,000 (1920, 1921, 1923, 1926, 1928, 1930, 1934) male mortality at 75-85 from all

Table XXIII.—Mortality at various ages from all causes in 1933 and 1934, per cent. of that for the same sex and age in 1921-30 and in 1934 per cent. of that for 1911-14.

	Males.			Females.			Persons.		
	Per cent. of 1921-30.		Per cent. of 1911-14.	Per cent. of 1921-30.		Per cent. of 1911-14.	Per cent. of 1921-30.		Per cent. of 1911-14.
	1933.	1934.	1934.	1933.	1934.	1934.	1933.	1934.	1934.
All Ages—									
Crude	100·2	96·8	84·0	102·7	97·5	85·1	101·4	97·1	84·5
Standardized { A	92·3	88·2	70·3	91·7	86·7	67·9	92·0	87·4	69·1
{ B	93·0	89·0	71·4	92·8	87·6	70·0	92·8	88·3	70·6
0—	78	76	48	78	77	46	78	76	47
5—	90	99	75	91	102	73	91	100	74
10—	89	87	73	84	85	68	87	86	71
15—	98	91	81	91	88	81	95	90	81
20—	99	92	83	96	88	83	98	90	83
25—	90	83	65	93	88	75	92	85	70
35—	90	80	64	96	85	64	93	82	63
45—	101	94	74	97	90	67	99	92	70
55—	97	96	78	95	91	73	96	93	76
65—	96	94	88	96	91	83	96	93	86
75—	102	94	95	100	91	91	101	93	93
85 and upwards	101	91	94	99	88	97	100	89	96

A. English Standard (Population of England and Wales 1901).

B. International Standard. (See page 2.)

causes never exceeded 133 and female mortality never exceeded 109 per 1,000, whereas in the remaining 9 years with influenza above this level, the male rate for all causes ranged from 137 to 154 and the female rate from 112 to 131. In seeking an explanation for the contrasts between 1933 and 1934 rates, this factor is an important one.

Table XXIV measures the effect of changes in the birth-rate upon the mortality rate at 0-5 years in 1911-14 and from 1917 onwards, by comparison with the trend of rates which have been standardized by reference to the 1901 Census population at individual years of age up to 5. It shows that in all these years the fall of the

birth-rate has caused some under-statement of crude mortality at 0-5 for each sex except during the three years 1920-22, when its temporary rise after the war reversed the process. The fall of 53 per cent. shown for this mortality in Table XXIII is seen to be slightly over-stated from this cause, being reduced to 50 per cent. when the standardized rates are considered.

Both the crude and standardized rates at these ages were the lowest ever recorded.

Table XXIV.—Comparison of Crude and Standardized Death-Rates per 1,000 living at Age 0-5, 1911-14 and 1917-34.

	Males.		Females.		Persons.	
	Crude.	Stand-ardized.	Crude.	Stand-ardized.	Crude.	Stand-ardized.
1911-14 ..	40·6	40·8	33·9	34·2	37·3	37·5
1917	31·8	34·3	26·3	28·4	29·1	31·4
1918	38·9	43·1	34·1	37·5	36·5	40·3
1919	32·8	36·6	26·4	29·5	29·6	33·1
1920	36·2	31·8	28·9	26·0	32·5	29·0
1921	32·3	29·2	25·8	23·6	29·1	26·4
1922	30·2	28·5	24·5	23·1	27·4	25·8
1923	24·3	25·0	19·6	20·1	22·0	22·5
1924	25·1	27·3	20·2	21·8	22·6	24·6
1925	25·3	27·1	20·7	22·1	23·0	24·6
1926	23·3	24·9	18·8	20·0	21·1	22·4
1927	23·7	25·2	18·9	20·0	21·3	22·6
1928	21·9	23·3	17·4	18·5	19·7	20·9
1929	26·3	27·7	21·6	22·7	24·0	25·2
1930	20·5	21·4	16·0	16·7	18·3	19·1
1931	22·4	23·1	17·4	18·0	19·9	20·6
1932	21·0	22·0	16·8	17·6	19·0	19·8
1933	19·9	21·2	15·8	16·9	17·9	19·1
1934	19·3	20·7	15·6	16·7	17·5	18·7

Mortality at 1-5.—Table XXV shows that mortality has fallen more rapidly for the years immediately following infancy than for the first year of life itself, so the features of the changes in progress at these ages also call for some consideration. Compared with 1911-14 or 1921-30 the decline in 1934 has been least in the fifth year and greatest in the second, decreasing continuously from the second to the fifth year of life. The second year of life usually manifests the greatest degree of annual variation and would seem to be the age of greatest susceptibility to disturbing factors. That the death-rates of children aged 1-5 are more sensitive than those of infants or older children to environmental factors such as are indicated by urbanisation or density of persons per room was shown in the Review for 1932 (Table XXVIII).

Compared with the preceding year, whilst mortality was lower at ages under 2, it was higher during the third, fourth and fifth years of life. At 3-4 the rate exceeded those of all years since 1929, and at 4-5 exceeded those of all years since 1930, and in view of the increase at ages 5-10 also, the reasons for this unfavourable feature in an otherwise good year require some examination, first with regard to the regional distribution and then with regard to the causes of death chiefly concerned.

Table XXV.—Mortality per 1,000 living (both sexes), in each of the first Five Years of Life, 1911-14, 1921-30, 1933, and 1934.

Year of Life.		1911-14.	1921-30.	1933.	1934.	1934 per cent. of	
						1911-14.	1921-30.
0-1	.. ..	118·16	75·51	64·85	63·12	53·4	83·6
1-2	.. ..	34·06	19·88	13·06	12·75	37·4	64·1
2-3	.. ..	13·68	8·51	5·86	5·92	43·3	69·6
3-4	.. ..	8·32	5·23	4·09	4·47	53·7	85·5
4-5	.. ..	6·14	3·90	3·36	3·56	58·0	91·3
0-5	{ Crude ..	37·27	22·90	17·88	17·50	47·0	76·4
	{ Standard ..	37·52	23·52	19·05	18·74	49·9	79·7
1-5	{ Crude ..	15·62	9·47	6·56	6·59	42·2	69·6
	{ Standard ..	15·54	9·37	6·58	6·67	42·9	71·2

The distribution throughout the country of mortality at 1-2 and 2-5 is shown in Table XXVI, which may be compared with Table XIII (Infant Mortality). The greatest excess over the general average recorded in the table at ages 1-2 is for North I, which shows a rate more than twice the corresponding rates for the Eastern region, the South-West and the South-East. Next in order comes North IV, followed by North II and Greater London. At 2-5 North I also shows the highest rate, followed by the other North regions. The South-East excluding Greater London and the South-West occupy the lowest places in the order of mortality at both ages. The division of Wales into two regions indicates that Wales II, which is of course mainly rural, had, as in the 3 preceding years, a mortality for the second year of life much below the general average.

Comparison of 1934 mortality at ages 2-5 in each region with the rates in 1931-33 (Table XXVII) shows that the increase was chiefly in Greater London, the South-East and East, whilst the Midlands and Wales registered a considerable decline, the Midland rates having fallen progressively during the 4 years.

The sensitiveness of mortality at age 1-2 to the general healthiness of the year has been pointed out in previous Reviews. It is to be expected that the most susceptible age would also exhibit the

greatest range of regional variation. It has been shown that when the regional rates are expressed as percentages of the rate for England and Wales, their range tends to increase during the first two years of life. In 1934 the range was 59–134 at 6–9 months, 59–155 at 9–12 months, 65–148 in the second year, and 66–144 at ages 2–5 (Tables XIV and XXVI), being maximal at 9–12 months.

Table XXVI.—Distribution of Mortality in Early Childhood, 1934.

	Deaths per 1,000 living (both sexes).		Mortality per cent. of that in England and Wales.	
	1–2 years.	2–5 years.	1–2 years.	2–5 years.
England and Wales ..	12·75	4·64	100	100
South-East	12·26	4·22	96	91
Greater London ..	14·79	4·87	116	105
Remainder of South-East.	8·33	3·24	65	70
North	15·74	5·95	123	128
North I	18·87	6·68	148	144
„ II	14·75	5·57	116	120
„ III	13·57	5·85	106	126
„ IV	15·83	5·76	124	124
Midland	10·48	3·64	82	78
Midland I	10·63	3·66	83	79
„ II	10·18	3·60	80	78
East	9·34	3·49	73	75
South-West	8·64	3·07	68	66
Wales	11·50	4·67	90	101
Wales I	12·03	4·96	94	107
„ II	9·89	3·82	78	82
County boroughs* ..	14·90	5·38	117	116
Other urban districts* ..	11·02	4·52	86	97
Rural districts* ..	9·57	3·37	75	73
Greater London—				
Administrative County	19·29	5·87	151	127
Outer Ring	10·53	3·95	83	85

* Excluding Greater London.

The association with urbanization at these four age periods is reflected in the differences between the percentage rates for the county boroughs and rural districts outside Greater London, amounting to 49 at 6–9 months, 47 at 9–12 months, 42 at 1–2 years and 43 at 2–5, the range being maximal at 6–9 months.

Causes of Mortality at 1–5.—London mortality at 1–2 years was higher in 1934 than in any year since 1929, and at 2–5 it was higher than in any year since 1924. The London experience for each year

Table XXVII.—Mortality at 2-5 years in Geographical Regions, 1931, 1932, 1933, and 1934.

	Deaths per 100,000 Living.				Mortality in 1934 per cent. of 1931-33.
	1931.	1932.	1933.	1934.	
England and Wales	485	453	444	464	101
Greater London	370	463	381	487	120
Remainder of South-East ..	304	313	298	324	106
North I	811	558	590	668	102
„ II	645	515	524	557	99
„ III	628	567	566	585	100
„ IV	596	592	607	576	96
Midland I	497	387	383	366	87
„ II	420	408	372	360	90
East	317	315	335	349	108
South-West	337	316	306	307	96
Wales I	606	455	577	496	91
„ II	436	393	422	382	92

from 1922-34, depicted in Table XXVIII, indicates that measles, whooping cough, pneumonia, and diphtheria have been chiefly responsible for the wide fluctuations in mortality during the second year of life, and when these causes together with influenza are omitted, the residual death-rates have followed a declining course with relatively slight fluctuations.

The principal causes of death at 2-5 in 1934 were pneumonia, diphtheria, measles, violence and tuberculosis, and the deaths from

Table XXVIII.—Mortality from Various Causes at 1-2 and all causes at 2-5 years of Age in London Administrative County in each year 1922 to 1934.

	1-2 years.							2-5 years.	
	Death rate per 1,000 Living.							Death rate from all causes.	
	Diphtheria.	Measles.	Whooping cough.	Influenza.	Pneumonia.	Other causes.	All causes.	Per 1,000 Living.	Per cent. of England and Wales.
1922 ..	2.22	8.08	5.16	1.25	12.81	7.25	36.77	148	12.03
1923 ..	0.84	1.87	1.47	0.09	4.51	6.47	15.25	81	5.26
1924 ..	0.73	6.93	2.12	0.50	9.05	5.91	25.24	115	6.84
1925 ..	0.59	1.87	3.42	0.21	5.99	5.62	17.70	82	5.30
1926 ..	0.97	5.55	0.99	0.09	6.15	5.36	19.11	104	5.19
1927 ..	0.71	1.04	2.38	0.38	6.15	5.24	15.90	81	4.81
1928 ..	1.07	8.33	2.01	0.25	5.64	5.25	22.55	139	5.71
1929 ..	0.64	1.44	6.19	1.06	9.75	5.55	24.63	105	5.68
1930 ..	0.95	7.55	0.61	0.05	4.35	5.02	18.53	135	4.70
1931 ..	0.52	0.76	1.59	0.34	5.13	4.94	13.28	85	4.15
1932 ..	0.62	6.38	1.78	0.15	3.87	5.36	18.16	128	5.62
1933 ..	0.47	0.68	1.89	0.28	4.27	4.31	11.91	91	4.33
1934 ..	0.88	7.13	1.75	0.09	4.93	4.50	19.29	151	5.87

the first four of these causes and from all other causes combined are set out in Table XXIX for the regions where an increase was manifest, and for the remainder of England and Wales. In Greater London measles caused 329 deaths in excess of the preceding year, diphtheria an excess of 84 and pneumonia of 47, whilst violent deaths fell by 23 and other deaths by 89. A large increase of measles deaths occurred also in each of the other divisions distinguished, and diphtheria deaths increased greatly in the South-East outside Greater London and in the remainder of England and Wales, though not in the East. Pneumonia deaths increased in the South-East and violent deaths in the East, but elsewhere for these causes, and in each division for the group of "other causes," deaths in 1934 registered a decline.

It is evident that measles and diphtheria were mainly responsible for the unsatisfactory rates at 2-5 in the South-East, and had it not been for these two diseases a considerable fall in the rates throughout the country would have occurred.

Table XXIX.—Deaths at Ages 2-5 from Measles, Diphtheria, Pneumonia, Violence and Other Causes in Several Geographical Divisions, 1931, 1932, 1933, 1934.

	1931.	1932.	1933.	1934.	1931.	1932.	1933.	1934.
	Greater London.				Remainder of South-East.			
Measles	40	333	40	369	31	76	33	55
Diphtheria	175	173	212	296	77	34	36	93
Pneumonia	259	229	227	274	134	110	101	130
Violent causes ..	110	111	121	98	69	64	67	67
Other causes	679	736	709	620	368	613	434	381
All causes	1,263	1,582	1,309	1,657	679	697	671	726
	East.				Remainder of England and Wales.			
Measles	16	24	15	53	860	480	489	660
Diphtheria	27	28	16	17	552	539	534	805
Pneumonia	56	49	47	42	1,480	1,153	1,272	1,030
Violent causes ..	27	27	28	32	600	539	527	509
Other causes	140	134	173	142	3,025	2,801	2,829	2,495
All causes	266	262	279	286	6,517	5,512	5,651	5,499

The chief causes of death in England and Wales at ages 1-5 are set forth in Table XXX, which also provides comparison with 1911-14 and with 1921-30.

Mortality from all causes combined at these ages was 42 per cent. of the rate in 1911-14 and 70 per cent. of that in 1921-30. The causes showing an increase over 1921-30 were diphtheria, violence

other than burns and scalds, scarlet fever, measles, and congenital malformations. On the other hand, each form of tuberculosis, rickets, meningitis, convulsions, bronchitis, inflammation of the stomach, diarrhoea, acute nephritis, and burns and scalds all established new low records.

Table XXX.—Deaths from Various Causes per Million living at Ages 1–5 Years in 1911–14, 1921–30 and 1934. (Both Sexes.)

Cause of Death.	Death-rate.			Cause of Death.	Death-rate.		
	1911–14.	1921–30.	1934.		1911–14.	1921–30.	1934.
7. Measles	2,673	1,104	1,117	105: 2. Laryngitis	152	51	19
8. Scarlet fever	373	143	166	106. Bronchitis	872	448	170
9. Whooping cough	1,216	864	446	107. Broncho-pneumonia ..	2,170	2,120	1,235
10. Diphtheria	781	535	607	108 & 109. Pneumonia (Lobar and not otherwise defined).	866	536	356
11. Influenza	60	270	58	Other Respiratory Diseases ..	140	80	56
23. Tuberculosis of Respiratory System.	237	136	64	118: 1. Inflammation of the Stomach.	94	43	16
24. Tuberculosis of Nervous System.	705	445	339	119 & 120. Diarrhoea and enteritis	1,639	468	213
25. Tuberculosis of Intestines and Peritoneum.	391	157	55	130. Acute nephritis	89	43	23
26–32. Other Tuberculous Diseases.	288	155	106	157. Congenital malformations.	85	79	81
63: 1. Rickets	172	93	35	181. Burns and scalds	360	247	161
79. Meningitis	451	188	97	Other Violence	274	239	264
86. Convulsions	460	179	66	Other Causes	1,071	847	839
				All Causes	15,619	9,470	6,589

It was demonstrated in Table XXIV of the Review for 1931 that the quinquennial rates since 1876–80 at ages 0–5 have fallen continuously, both for tuberculosis of the nervous system and of the intestines and peritoneum. To maintain continuity with that table the rates per 1,000 at 0–5 years in 1934 were 0·35 for the nervous system, 0·06 for the intestines and peritoneum, 0·18 for other forms and 0·60 for all forms of tuberculosis.

The decline in mortality assigned to other infective and respiratory diseases and to meningitis, convulsions and rickets since 1921 is revealed by the annual rates in Table XXXI.

Table XXXI.—Death-Rates from various causes per million living at ages 1–5 years in each year 1921–1934.

	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria.	Bronchitis and pneumonia.	Diarrhoea and enteritis.	Meningitis.	Convulsions.	Rickets.
1921 ..	603	198	853	778	3,305	990	288	321	109
1922 ..	1,530	229	1,838	723	4,461	403	263	268	86
1923 ..	1,332	169	745	464	2,700	479	233	219	98
1924 ..	1,155	149	716	438	3,368	424	205	189	94
1925 ..	1,326	172	1,108	473	3,033	466	188	191	102
1926 ..	848	105	749	474	2,784	502	165	153	86
1927 ..	950	90	743	448	3,339	358	157	133	80
1928 ..	1,122	92	572	504	2,250	368	120	99	102
1929 ..	965	102	1,411	533	3,940	419	138	117	89
1930 ..	1,142	116	401	552	1,792	276	111	89	78
1931 ..	923	87	540	427	2,487	271	114	87	80
1932 ..	988	92	602	387	1,929	266	126	85	66
1933 ..	571	129	494	394	1,986	300	106	77	41
1934 ..	1,117	166	446	607	1,761	213	97	66	35

The most favourable years for measles were 1933 and 1921, and for whooping cough 1930 and 1934, the worst years for the latter being 1922, 1929 and 1925. Scarlet fever and diphtheria rates moved downwards together from 1922 to 1924, and from 1930 to 1931, and upwards in unison from 1924 to 1925, 1927 to 1930 and 1932 to 1934. Meningitis, other than cerebro-spinal or tuberculous, and convulsions are rapidly disappearing as certified causes of death.

Mortality at 5-10.—The recent increase in the death-rate of children of these ages, already commented upon, is due in the main to diphtheria, to which cause 1,859 deaths of children aged 5-10 were assigned in 1934, or 25 per cent. of the deaths from all causes. It will be demonstrated later (Table XL) that the diphtheria death-rate at this period of life was the highest since 1902, with the single exception of 1920. Table XXXII shows that the residual rate from all causes except diphtheria fell to 1·97 per 1,000 in 1923, fluctuated slightly until 1929, declined again to 1·77 by 1932 and has remained at 1·82 in 1933 and 1934. The measles rate has not manifested any consistent change at this age during the last 13 years, but the pneumonia rate has tended to decline. Mortality from diseases of the ear and mastoid has increased considerably from the low rate of 41 per million reached in 1922 to 89 in 1934. The risk of death from violence has declined recently from the high levels reached about 1929. The tuberculosis rate has steadily declined.

Table XXXII.—Death-Rates at Ages 5-10 per Million Living from Various Causes, 1921-34.

		All Causes.	Diphtheria.	All except diphtheria.	Measles.	Tuberculosis, all forms.	Diseases of Ear and Mastoid.	Pneumonia.	Violence.
1921	..	2,759	542	2,217	47	408	51	285	255
1922	..	2,562	411	2,152	111	388	41	260	244
1923	..	2,252	282	1,971	99	391	44	243	239
1924	..	2,302	253	2,049	98	367	47	259	261
1925	..	2,470	308	2,161	129	354	42	294	264
1926	..	2,427	374	2,053	87	341	57	267	276
1927	..	2,332	309	2,023	81	332	56	303	299
1928	..	2,329	372	1,957	117	318	54	242	307
1929	..	2,461	392	2,069	77	297	57	297	328
1930	..	2,282	410	1,872	116	286	61	215	307
1931	..	2,144	320	1,824	90	263	59	229	296
1932	..	2,070	298	1,773	103	243	63	212	294
1933	..	2,194	377	1,817	61	224	73	228	302
1934	..	2,428	610	1,819	133	225	89	196	272

Mortality of the Aged.—The rapid increase in the relative magnitude of this section of the population continues to form an outstanding feature of our vital statistics. Persons over 70 years of age were 297 per 10,000 total population in 1911, 344 in 1921, and 426 in 1931, and were estimated as forming 455 per 10,000 in 1934.

The causes of death at ages over 70 are grouped, as in previous years, in Table XXXIII.

Table XXXIII.—Mortality over 70 Years of Age in 1911–20, 1921–30, 1932, 1933 and 1934, from the chief Causes of Death.

	Deaths from each Cause per 1,000 Total Deaths.					Mortality per 1,000 Living.				
	1911– 20.	1921– 30.	1932.	1933.	1934.	1911– 20.	1921– 30.	1932.	1933.	1934.
MALES.										
Influenza (11)	20	26	23	37	9	2.3	2.8	2.6	4.1	0.9
Cancer (45–53)	81	107	119	116	125	9.4	11.8	13.2	12.8	13.0
Heart Diseases (90–95)	148	205	308	317	335	17.1	22.7	34.0	34.9	34.8
Disease of Blood Vessels, including Cerebral Hæmorrhage (82, 96, 97, 99 and 100)	163	195	170	166	169	18.8	21.6	18.8	18.3	17.6
Bronchitis (106)	137	110	63	63	54	15.9	12.1	7.0	7.0	5.6
Pneumonia (107–109)	34	35	31	31	31	4.0	3.9	3.4	3.4	3.3
Chronic Nephritis (131 and 132)	29	29	35	32	34	3.3	3.2	3.9	3.5	3.6
Old Age (162)	222	140	87	79	76	25.7	15.5	9.6	8.7	8.0
Other Causes	166	153	163	158	167	19.0	17.2	18.0	17.4	17.4
All Causes	1,000	1,000	1,000	1,000	1,000	115.5	110.8	110.5	110.1	104.2
FEMALES.										
Influenza (11)	24	31	31	50	11	2.3	3.0	2.9	4.8	1.0
Cancer (45–53)	87	105	109	108	118	8.7	10.2	10.2	10.4	10.4
Heart Diseases (90–95)	153	223	322	329	347	15.2	21.6	30.2	31.6	30.6
Disease of Blood Vessels, including Cerebral Hæmorrhage (82, 96, 97, 99 and 100)	157	181	170	159	170	15.5	17.6	15.9	15.2	15.0
Bronchitis (106)	149	117	69	70	56	14.8	11.4	6.5	6.7	4.9
Pneumonia (107–109)	32	34	33	32	32	3.2	3.3	3.1	3.1	2.8
Chronic Nephritis (131 and 132)	21	23	29	27	29	2.1	2.2	2.7	2.6	2.6
Old Age (162)	248	165	111	100	99	24.6	16.0	10.4	9.6	8.7
Other Causes	129	121	127	124	138	12.7	11.7	11.9	11.9	12.2
All Causes	1,000	1,000	1,000	1,000	1,000	99.0	97.0	93.8	96.1	88.3
PERSONS.										
Influenza (11)	22	29	27	44	10	2.3	3.0	2.8	4.5	0.9
Cancer (45–53)	85	106	114	112	121	9.0	10.8	11.4	11.4	11.5
Heart Diseases (90–95)	151	215	316	324	341	16.0	22.0	31.8	33.0	32.4
Disease of Blood Vessels, including Cerebral Hæmorrhage (82, 96, 97, 99 and 100)	159	187	170	162	169	16.9	19.2	17.1	16.5	16.1
Bronchitis (106)	144	114	67	67	55	15.2	11.7	6.7	6.8	5.2
Pneumonia (107–109)	33	34	32	32	32	3.5	3.5	3.2	3.2	3.0
Chronic Nephritis (131 and 132)	24	26	32	29	32	2.6	2.6	3.2	3.0	3.0
Old Age (162)	237	154	100	91	89	25.0	15.8	10.1	9.3	8.4
Other Causes	145	135	143	139	151	15.3	14.0	14.4	14.2	14.3
All Causes	1,000	1,000	1,000	1,000	1,000	105.8	102.7	100.7	101.9	94.9

Centenarians.—Among the deaths registered during the year there were 76 of reputed centenarians, 6 of whom were males and 70 females. In the preceding three years the numbers were 91, 109 and 110 respectively. Particulars of the ages returned and of the regions concerned are given in Table XXXIV.

Table XXXIV.—Age at Death of Centenarians, 1934.

	Males.						Females						
	100 and over	100	101	102	103	104	100 and over	100	101	102	103	104	105
Greater London ..	—	—	—	—	—	—	14	7	5	1	—	1	—
Remainder of South-													
East	3	1	—	—	—	2	23	11	6	3	—	1	2
North	2	1	—	1	—	—	4	2	1	1	—	—	—
Midlands	—	—	—	—	—	—	8	5	1	1	1	—	—
East	—	—	—	—	—	—	4	1	—	1	1	—	1
South-West	1	—	—	1	—	—	9	4	2	—	2	1	—
Wales	—	—	—	—	—	—	8	4	1	2	—	—	1
England and Wales ..	6	2	—	2	—	2	70	34	16	9	4	3	4

CAUSES OF DEATH.

The causes of death of males and females at 18 groups of ages are stated in Table 21 for the whole country, and in Table 22 further detail of age is shown for all causes of significance at ages 0–5. In Table 23 deaths from each cause distinguished are tabulated by month of occurrence and by sex (but not by age). Table 23 differs from all others in referring to date of occurrence and not of registration. Table 21 includes the full International List of causes of death, as revised in 1929. Certain of the numbered items in it are subdivided, and where this occurs the letters (*a*), (*b*), &c., indicate subdivisions in international use, and numbers (1), (2), &c., subdivisions made without international agreement. All other abstracts of the causes of death are arranged in the form of the short list of causes adopted by the Registrar-General in consultation with the Ministry of Health for use during 1931–40. The relation of this list to the detailed International List, as revised by the International Commission in 1929, is shown at the head of Table 24.

The contents of every heading in both the short and the detailed list now in use are defined in the Registrar-General's "Manual of the International List of Causes of Death" (1929 Revision),* which should be consulted in all cases where it is desired to ascertain the precise significance of any heading in the lists.

Where two or more causes of death are jointly stated, the classification of the death to one or other of the causes in the International List is carried out in conformity with rules of selection, whose general principles are laid down in the Manual. Thus, with certain exceptions, deaths from violence associated with disease are classed to the appropriate violent cause, and deaths from an infectious disease associated with a local disorder such as a cardiac or renal lesion are classed to the infectious disease. Deaths are therefore not always classed to the immediate cause, but in some instances to a more remote one leading up to it. These rules for selection have not been seriously modified since 1901, so that continuity in the

* Copies may be obtained from H.M. Stationery Office. Price 3s. net.

resulting tabulation has been maintained. Sufficient understanding and experience of the new form of certificate, introduced in 1927, has first to be gained before replacing the code of selective rules by the expressed opinion of the certifier. However desirable it may seem to make the change at once for certain combinations of causes, the importance of safeguarding the continuity of the statistics of causes of death must outweigh such considerations until the quality of certification is such as to justify reliance upon the order of statement for all combinations of causes. Special secondary tabulations according to the associated cause are made for deaths connected with anæsthetics, alcoholism and childbearing.

In Table 24 deaths are shown for the several geographical regions of the country, for urban and rural portions of administrative counties, and for county and metropolitan boroughs, arranged by sex, age, and the short list of causes as set out at the head of the table. The same information, though not by age, is also available for each individual administrative area.

In addition to the above tables, which relate exclusively to the year 1934, Table 6 contains a statement of the number of deaths registered in each year 1924–34 from each cause distinguished in Table 21 so far as available, with distinction of sex but not of age; while Table 7 states the corresponding crude death-rates per million living for persons, males and females, so far as these can be regarded as of any significance, no rates being shown for causes which give a rate of less than five per million population. But the crude rates in Table 7 are liable to be misleading as indices of the progress of mortality even where their numerical basis is adequate. Owing to the rapid ageing of the population at the present time as a result of simultaneous fall in birth and death-rates the rates shown in Table 7 for causes mainly affecting old people tend automatically to increase, and thus to overstate mortality from such causes as cancer, cerebral hæmorrhage and heart disease. As this overstatement had become seriously misleading in many cases, Table 8 was inserted to correct it by showing the course of mortality from each cause dealt with when allowance is made for such population changes by standardization (*see* page 1). Owing to the clerical labour involved in the preparation of these rates the list of causes in Table 8 is much shorter than that in Table 7, and rates are shown only for males and females separately. Standardized rates for both sexes jointly are given for a few causes in Table 9. Tables Nos. 11 and 12 state the mortality during the eleven years 1924–34 of infants under one year of age from the causes of chief importance at that age, but without distinction of sex.

1, 2. Typhoid and Paratyphoid Fevers.—The number of deaths classified to this heading during 1934 was 159. Of these, 25 were ascribed to paratyphoid infection, forming 16 per cent. of the total compared with 18 per cent. in the preceding period of 5 years.

The standardized rate corresponding to these deaths, 4 per million persons living (Table 9), is the lowest recorded. This rate is quite trifling compared with those of earlier years, the rate for 1871-75, for instance, having been 371 per million, or over 90 times that for 1934.

The distribution of this mortality throughout the country is outlined in Table XXXV.

Table XXXV.—Typhoid and Paratyphoid Fevers ; Mortality, Prevalence and Fatality at all ages. Measles and Whooping Cough ; Mortality at ages under five years, and Proportion of Deaths occurring in the First One or Two Years of Life, 1934.

	Typhoid and Paratyphoid Fevers.			Measles.		Whooping Cough.	
	Deaths per million living.	Cases† per million living.	Deaths per 1,000 cases notified.	Deaths per 100,000 living at 0-5.	Deaths at 0-2 per cent. of those at all ages.	Deaths per 100,000 living at 0-5.	Deaths at 0-1 per cent. of those at all ages.
England and Wales	4	30	131	114	57	67	44
South-East.. ..	4	29	128	139	57	62	39
Greater London..	3	26	128	200	60	73	37
Remainder of South-East ..	4	33	127	44	45	46	43
North	4	36	120	150	58	71	42
North I	6	96	65	165	52	77	49
„ II	7	36	196	176	62	37	60
„ III	5	18	254	138	61	52	41
„ IV	3	25	118	144	59	86	38
Midland	4	22	191	56	53	76	49
Midland I	5	23	221	45	58	88	49
„ II	2	20	125	77	47	51	52
East.. ..	4	37	103	81	43	66	46
South-West	4	38	115	42	52	49	54
Wales	2	16	150	40	44	66	55
Wales I	2	13	125	43	44	55	55
„ II	4	23	188	29	43	100	56
County boroughs* ..	4	24	150	129	58	85	44
Other urban districts* ..	4	30	133	78	52	54	44
Rural districts* ..	5	45	113	53	50	51	53
Greater London :—							
Admin. County ..	4	30	117	289	62	102	37
Outer Ring ..	3	22	144	118	55	46	39

* Excluding Greater London.

† Including cases in Port Sanitary Districts.

The highest mortality rate in 1934 for any region is that for North II. North I follows next, and Wales I and Midland II show the lowest rates. Excess of mortality in the small towns had been

the general rule during the twenty years preceding 1933, but in 1934 the rural districts outside Greater London had a rate of 5 per million, the small towns 4, and county boroughs 4.

Prevalence (Table 26) was 3 per 100,000 living, the lowest rate recorded. The fatality rate (Table XXXVI) was above the rates of the four preceding years. The distribution throughout the various regions in 1934 is also shown in Table XXXV.

Prevalence was highest in North I and lowest in Wales I. Fatality was highest in North III. The proportion of paratyphoid to total notifications ranged from 25·6 in Wales to 33·8 in the South East, 34·3 in the South West, 34·9 in the Midlands, 41·8 in the East, and 42·9 per cent. in the North.

Table XXXVI.—Fatality of certain Infectious Diseases (Deaths per 1,000 Notified Cases), 1911–34.*

Year.	1. Enteric (typhoid and para- typhoid) fever.	6. Small-pox.	8. Scarlet fever.	10. Diphtheria.	15. Erysipelas.	16. Poliomyelitis (including polioencepha- litis).	17. Encephalitis lethargica.	18. Cerebro- spinal fever (meningo- coccal meningitis).
1911	174	78·0	18·1	103	39	?	?	?
1912	191	73·2	18·6	96	39	?	?	?
1913	182	87·0	16·1	88	35	283	?	1,089
1914	194	61·5	17·2	99	42	348	?	1,257
1915	199	141·3	18·6	107	46	331	?	630
1916	174	113·2	17·8	101	39	270	?	656
1917	205	333·3	15·3	100	43	469	?	663
1918	201	30·8	20·5	106	47	1,004	?	673
1919	147	77·6	14·7	90	42	297	533	727
1920	171	114·1	12·0	81	52	404	539	911
1921	158	15·9	9·5	72	55	314	493	1,007
1922	191	27·7	12·7	78	53	352	742	1,047
1923	140	2·8	11·6	68	50	185	517	934
1924	120	3·5	10·5	60	52	183	279	746
1925	139	1·7	10·8	58	57	370	520	876
1926	133	1·8	8·3	59	55	181	583	926
1927	103	3·2	6·8	52	56	203	713	911
1928	124	4·3	5·7	52	55	306	819	1,061
1929	133	3·6	6·0	55	58	263	999	882
1930	106	2·4	6·7	47	56	212	1,241	938
1931	110	1·6	6·6	53	66	247	1,471	650
1932	101	1·5	6·2	54	68	237	1,463	568
1933	126	3·2	5·6	56	66	253	1,887	556
1934	131	33·5	6·3	59	71	201	1,917	666

* The rates in this table are given with reserve, being in some respects unsatisfactory. For the years 1911–13 cases of disease among non-civilians have been excluded from the notification returns, but it has not been possible to distinguish their deaths; for the years 1920–1925 inclusive both cases and deaths relate to civilians only; for all other years the figures relate to the total population.

The numbers relating to small-pox in some years are too small to yield significant rates, but their basis of fact can be ascertained from Tables 6 and 23, and the rates quoted serve to bring out the extremely mild type of disease prevalent in 1921–33. The rates for poliomyelitis include polioencephalitis, which was not distinguished in the notification returns until 1919. The extraordinary rise in 1918 is partly ascribable to certification of a number of deaths from the then “new disease,” encephalitis lethargica, as polioencephalitis, but mainly to a reduction in notifications unaccompanied by significant change in the number of deaths (*see* Report for 1918). The rates from this disease will be found to differ from some of those published in the Annual Reports of the Chief Medical Officer of the Ministry of Health, partly because polioencephalitis is included throughout and partly because special inquiries made by the Ministry in certain years have led to revision of the returns for those years, which is not embodied in Table XXXVI. The cases there referred to are similar for each year dealt with, being in all cases derived from the published notification returns. The latter source of discrepancy applies also to cerebro-spinal fever, and in this case there is a possibility that some cases of posterior basal meningitis may not have been notified as cerebro-spinal fever though all such deaths are included in the table.

The highest mortality rate recorded in Table 10 is, for counties of over 100,000 population, 15 per million in Cumberland and 14 in Cambridgeshire. The county boroughs with highest rates are Worcester (38), Chester (25), Burton-upon-Trent (21) and Dewsbury (19).

6. Small-pox.—The deaths allocated to this cause numbered 6. The mortality record for this disease is contained in Table 9, which shows that the standardized rate for 1934 was less than 0·5 per million, indicated by 0 in the table, as in seventeen other years since the 1901–05 epidemic. In the remaining eleven of these years the rate has been one per million.

Of the 6 deaths classed to small-pox, 4, occurring in Blackburn, were described as variola major; of the other two, a male, aged 16 in Southwark and a female aged 57 in Havant, the type was not specified in the records of death.

The notified cases numbered 179, compared with 631 in 1933 and 2,039 in 1932, and of these 149 occurred in Greater London, and 23 in Blackburn.

Owing to the outbreak of variola major at Blackburn the fatality rate based upon the total deaths and notifications in England and Wales was enhanced to 33·5 per 1,000 cases, compared with 3·2 in 1933 (Table XXXVI).

7. Measles.—The deaths registered from this cause numbered 3,768 corresponding to a mortality of 93 per million population. But allowance for decreased proportion of children in the present population increases the rate on standardization from 102 to 151 for males and from 85 to 139 for females. The death-rate for children under 15 years of age, 390 per million, is seen from Table 9 to be the highest since 1930.

The distribution throughout the country of mortality from measles is stated in Table XXXV in the form of death-rates per 100,000 living at ages 0–5. Deaths at these ages in 1934 formed 87 per cent. of the total, and statement in this form prevents the comparison being prejudiced by varying proportions of children in the populations compared. The regions showing the highest rates were Greater London and North II.

The Table also demonstrates to what an extent measles mortality is enhanced by urban conditions, the county borough rate of 129 being almost $2\frac{1}{2}$ times that in the rural districts, a similar gradation with urbanisation having been evident in each of the 24 years for which the facts are available. The proportion of deaths which occurred at ages under 2 years was 50 per cent. in the rural districts and 58 per cent. in the county boroughs, and was higher in the North, Midland I and Greater London than in the less urbanised areas.

The relations of combined measles and whooping cough mortality at ages under 5 to latitude and to overcrowding were referred to in the Review for 1932 (Table XXVII and Diagram 2). Owing to

large annual fluctuations in local mortality from these diseases, average rates over a long period of years must be used in order to obtain a reliable measure of the association between these factors and mortality from each disease separately. The averages of the annual death-rates from measles per million children living at ages under 5 during the 14 years 1921–34 in each county borough have been used for this purpose in Table XXXVII, where the 83 towns have been grouped according to their latitude and the proportion of their populations living at densities of 2 per room or over in 1931. The means of the death-rates in the county boroughs comprising each group are found to increase very greatly with the overcrowding rate in each zone of latitude, as may be seen by following the rates down each vertical column of the table. Within each of the zones bounded by 51–52°, 52–53° and 53–54° of north latitude the average mortality risk from measles to children under 5 is about 3 times as great in towns having more than 12 per cent. of their population living at densities of 2 or more per room as in towns having less than 3 per cent. living at such densities.

Table XXXVII.—Average Annual Death-Rates from Measles per 100,000 Children aged 0–5 during 1921–34 in the County Boroughs distributed according to Rate of Overcrowding and Latitude.

Per cent. at density over 2 per room in 1931.	Degrees of North Latitude.						All latitudes.
	50°–	51°–	52°–	53°–	54°–	55°–	
0–	21	53	72	57	—	—	53
3–	85	90	91	121	—	—	100
6–	—	99	121	141	106	—	128
9–	102	—	199	214	168	—	198
12–	—	—	195	157	269	—	194
15–18.. ..	—	177	—	204	224	199	212
All	67	93	106	152	167	199	127

Amongst towns with a similar index of overcrowding the lowest rates occur in the south-coast towns (50°–) in each instance, but as the rates are then followed further north, that is to say horizontally across the table, it is evident that mere northerliness of situation, when thus divorced from its accompanying increased housing density, has no important effect upon measles mortality.

During 1921–34 the highest average rates at ages under 5 were given by Liverpool with 3,325 deaths per million, Sunderland (2,866), Wigan (2,826) and Middlesbrough (2,682). The lowest rates were those of Bournemouth (208), Eastbourne (209), Canterbury (323) and Southend (413).

Table 10 shows that, of administrative counties with over 100,000 population, Yorkshire North Riding returned the highest

death-rate at all ages in 1934, 217 per million or more than twice the rate for England and Wales, London with 202, Durham with 141, and Northumberland with 133, coming next. The highest county borough rates were—Middlesbrough 717, Barnsley 645, Bootle 352 and West Ham 340.

8. Scarlet Fever.—Deaths registered from this cause numbered 963, smaller numbers having been recorded in 1917, 1924 and each year 1926 to 1933. The rate at ages under 15, 83 per million living, was also greater than in those years and 1918.

The progress of the decline from the maximum decennial rate of 1861–70 (Table 9) may be traced in the following statement of proportionate figures for subsequent periods, taking the rate of 2,617 in that decade as 1,000—1871–80, 729; 1881–90, 345; 1891–1900, 168; 1901–10, 119; 1911–20, 54; 1921–30, 28; 1931, 17; 1932, 18; 1933, 24; 1934, 32. The records of individual years since 1881 indicate that, ignoring increases which were not maintained over at least two years, the downward trend has been interrupted by short periods of rising rates, such periods being 1888–90, 1891–93, 1898–1902, 1911–14, 1917–20, 1928–30 and 1932–34. Save in 1934 each successive maximum has been lower than the preceding one. It is noteworthy that several of the periods of increase were coincident with similar periods of rise in the diphtheria-death rate (1891–93, 1912–14, 1917–20, 1928–30, 1932–34.) Prevalence increased by 17 per cent. in 1934 compared with the preceding year, whereas mortality increased by 33 per cent.

Table XXXVI shows that the fatality ratio of deaths to notified cases was 6·3 in 1934 compared with a mean rate of 6·2 per 1,000 cases notified in the preceding five years. This rate is one-third of that at the commencement of the record in 1911, when the notifications were first tabulated, scarlet fever and small-pox showing much the greatest declines of fatality in the Table.

The distribution of the disease according to urbanisation and geographical location is given in Table XXXVIII. Increased prevalence compared with 1933 is recorded in every region except Greater London, North IV and Wales I, the percentage increase in the notification rate ranging from 17 in the South West to 77 in the East. In London Administrative County there was a 15 per cent. decrease in prevalence with a 16 per cent. fall in mortality. The death-rate fell also in North IV and the South West and remained the same in Wales II, but increased in the other regions.

The notification rate was greatest in North I, followed by North III, and lowest in Wales II, and showed as usual an increase with urbanisation from 304 in the rural districts to 434 in London Administrative County. The fatality ratios were lowest in Midland II, Greater London and the South West, and highest in North I and Wales II.

Table XXXVIII.—Scarlet Fever and Diphtheria, 1934 : Mortality at Ages under 15 Years, Prevalence and Fatality at All Ages.

	Scarlet Fever.				Diphtheria.		
	Deaths per million living at 0-15.	Cases per 100,000 living at all ages.	Deaths per 1,000 cases notified.	Deaths at 0-5 per 100 at all ages.	Deaths per million living at 0-15.	Cases per 100,000 living at all ages.	Deaths per 1,000 cases notified.
England and Wales ..	83	376†	6.3	42	402	170†	59
South-East	73	385	5.3	35	379	180	49
Greater London ..	75	433	4.4	39	450	223	46
Remainder of South-East	69	310	7.1	31	269	115	58
North	122	436	7.9	49	561	211	68
North I	268	763	11.5	53	357	160	68
„ II	67	338	6.2	33	645	196	88
„ III	127	463	7.3	55	756	276	67
„ IV	66	321	5.8	39	521	196	65
Midland	53	329	4.9	38	222	114	53
Midland I	65	351	5.4	35	254	130	53
„ II	31	287	3.5	50	159	85	50
East	55	330	5.6	29	166	66	72
South-West	22	194	4.7	26	184	81	53
Wales	73	326	7.3	44	509	202	69
Wales I	80	375	7.0	51	553	216	72
„ II	49	190	9.2	17	369	165	57
County boroughs* ..	79	389	5.8	44	479	206	59
Other urban districts*	92	366	7.3	46	403	141	73
Rural districts* ..	82	304	8.7	37	222	95	64
Greater London :—							
Admin. County ..	63	434	3.7	41	511	281	40
Outer Ring ..	87	432	5.2	37	392	163	57

* Excluding Greater London.

† Including Port Sanitary Districts.

Children under 5 provided 42.3 per cent. of the deaths, compared with 44.2 in 1933 and 45.7 in 1932. The death-rates per million living at ages 0-5, 5-10, 10-15 and 15-20 respectively were 142, 97, 24, 14, compared with 89, 52, 18, 9 in 1931-33, 87, 59, 19, 8 in 1926-30 and 154, 93, 30, 15 in 1921-25. It was shown in the Review for 1933 (p. 50) that the rate of fall in mortality risk has been greater for younger than for older children, the 1931-33 mortality rates at the four ages being 1.9, 2.4, 3.6 and 5.9 per cent. respectively of the corresponding rates in 1861-70. The death-rates in the first 4 quinquennia of life were in the ratio 100 : 42 : 10 : 4 in 1891-1900, and by 1926-30 this had changed to 100 : 68 : 22 : 9. In 1934 the ratio was 100 : 68 : 17 : 10.

Table 10 shows that, amongst counties with over 100,000 population, mortality was highest in Durham (102 deaths per million) and Northumberland (75).

The highest rates amongst the county boroughs (average 23) are those of Gateshead (138) and Sunderland (96).

Scarlet fever prevalence, as indicated by the average notifications per annum to each 1,000 persons living during 1931–34 is compared with that during 1921–24 in each county (including the associated county boroughs) in Table XLVI. In the country as a whole prevalence changed little in the interval, being 2·72 per 1,000 in 1921–24 and 2·79 in 1931–34. The counties manifesting a change in rate exceeding 15 per cent. during the ten years are found to group themselves into areas as follows:—

<i>Increases exceeding 15 per cent.</i>				<i>Decreases exceeding 15 per cent.</i>			
Northumberland	..	..	63	Cumberland	..	..	26
Durham	..	..	55	Westmorland	..	..	26
Yorkshire, N. Riding	..	..	17	Cheshire	..	..	33
„ W. Riding	..	..	24	Flint	..	..	23
„ E. Riding	..	..	63	Derby	..	..	25
Leicester	..	..	55	Stafford	..	..	28
Lincoln, Lindsey	..	..	34				
„ Kesteven	..	..	132	Rutland	..	..	48
„ Holland	..	..	47	Northampton	..	..	46
Huntingdon	..	..	211	Oxford..	..	..	45
Cambridge	..	..	63	Berkshire	..	..	26
Suffolk, East	..	..	60	Buckingham	..	..	18
„ West	..	..	76	Gloucester	..	..	38
Bedford	..	..	46	Somerset	..	..	25
Essex	..	..	24				
				Anglesey	..	..	40
Cornwall	..	..	74	Caernarvon	..	..	31
Devon	..	..	49	Merioneth	..	..	48
Pembroke	..	..	80	Montgomery	..	..	58
				Radnor..	..	..	17
				Carmarthen	..	..	31
Monmouth	..	..	57				
				Isle of Wight	..	..	53
Sussex, West	..	..	49	Norfolk	..	..	24

It is noteworthy that increases ranging from 17 to 211 per cent. occurred in all the counties adjacent to the East Coast north of the Thames with the exceptions of Norfolk and Ely. Despite these increases, however, the rate of prevalence in 1931–34 exceeded the average for England and Wales only in half of the counties of this eastern group. Decreases occurred in most of Wales and in the Midlands.

The correlation of this distribution of scarlet fever by counties with those of erysipelas and puerperal fever in the same periods is referred to on page 63.

9. Whooping Cough.—The deaths allocated to this heading numbered 2,049 (863 males and 1,186 females). The excess for females is shown by Table 6 to be a constant feature of this disease, and tends to increase with age. The percentage ratios of the

numbers of female deaths to male deaths in 1934 are 112 at 0-3 months, 121 at 3-6 months, 146 at 6-12 months, and 126, 131 and 258 in the second, third and fourth years of life respectively, the ratios between the death-rates being slightly higher owing to the excess of males at risk at these ages. An increasing female excess after 3-6 months, at which age the excess is scarcely appreciable when averaged over a period of years, has been a constant feature of the records of the last four decades.

The standardized death-rates, 67 for males and 94 for females (Table 8), are the lowest recorded except in 1930, this being true also of influenza mortality, with which, as was shown in the Review for 1933, whooping cough mortality has tended in recent years to be associated to some extent.

The death-rate per million living at ages under 15 reached a maximum of 1,511 for the five years 1866-70, after which, with a single exception, the quinquennial rates progressively declined to 387 in 1926-30. In 1934 the rate was 214 (Table 9).

The distribution of mortality at ages under 5 and the proportion of deaths under 1 year of age are given in Table XXXV. The average rates of the 5 years 1926-30 and the annual rates since 1931 at ages under 5 are :—

	London.	County boroughs.	Urban districts.	Rural districts.
1926-30 ..	130	133	106	90
1931 ..	99	105	71	52
1932 ..	116	121	88	72
1933 ..	111	79	64	68
1934 ..	102	85	54	51

Wales II, Midland I and North IV registered the highest mortality and North II and the remainder of South East the lowest.

North II showed the highest proportion of deaths at ages under 1 year. Only 37 per cent. of Greater London deaths were of children under 1 year of age compared with 53 per cent. in the rural districts.

When the county boroughs are grouped according to the zone of latitude in which they are situated and the rate of overcrowding, as in Table XXXIX, the average mortality at ages under 5 during the 14 years 1921-34 increases step by step with the overcrowding rate in the southern towns (50° - 52°), and a similar increase is noticeable amongst towns in the most northerly counties (54° - 55°), but this is less evident in the intermediate area.

It may be of some significance that the sex ratio of average female to male death-rate in the 12 towns with 12 per cent. or over of their populations living 2 or more per room was 1.41, compared with 1.28 in the remaining towns and 1.30 in all the county boroughs.

Although there is evidence of a northward increase in death-rates amongst the towns having less than 6 per cent. overcrowded, there is less indication of this amongst the other groups of towns.

Table XXXIX leads to the conclusion that overcrowding or the unsatisfactory social and economic conditions which are responsible for it, are in general more important in their effects on urban mortality from whooping cough than is northerliness of situation in England and Wales.

Table XXXIX.—Average Annual Death-Rates from Whooping Cough per 100,000 males and females aged 0–5 during 1921–34 in the County Boroughs, distributed according to Rate of Overcrowding and Latitude.

Per cent. at density over 2 per room in 1931.	Degrees of North Latitude.						All latitudes.
	50°–	51°–	52°–	53°–	54°–	55°–	
	Males.						
0–	51	53	101	57	—	—	69
3–	66	87	90	109	—	—	91
6–	—	100	150	129	74	—	124
9–	85	—	62	152	113	—	134
12–	—	—	100	98	135	—	107
15–18.. ..	—	166	—	109	149	95	139
All densities ..	65	91	102	122	131	95	108
Females.							
0–	68	59	118	87	—	—	87
3–	82	106	129	144	—	—	119
6–	—	125	177	158	97	—	152
9–	92	—	111	194	154	—	174
12–	—	—	161	140	213	—	163
15–18.. ..	—	218	—	137	202	155	190
All densities ..	80	111	137	157	181	155	141

10. Diphtheria.—The 4,085 deaths in 1934 include 1,971 males and 2,114 females. A female excess is shown also by the standardized death-rates (Table 8), as in each year since 1919 except 1922 and 1931, though the crude death-rate (Table 7) is generally higher for males. For 1934 the crude rates were 102 per million for males and 100 for females, and the standardized rates 134 for males and 144 for females.

The history of diphtheria mortality is best expressed by the death-rate from diphtheria and croup at ages under 15 in Table 9, for during last century much diphtheria was evidently returned as croup, and the larger proportional child population in itself tended to produce a higher crude death-rate at all ages. In 1861–65 this rate was 1,422 per million, but fell to 891 in the next quinquennium and the 5-yearly rates then showed only slight fluctuations until

the end of the century. The downward trend of annual rates since 1900 has been interrupted by short periods of increase. These occurred in 1912-14, 1917-20, 1924-26, 1927-30 and 1932-34, a contingent rise in scarlet-fever mortality occurring in four of these periods. The rate in 1934, 402 per million living under 15, is above that of the twelve preceding years. (Table 9.)

The annual mortality rates since 1901 at different ages shown in Table XL indicate a much greater proportionate decline in infancy

Table XL.—Diphtheria and Croup Mortality—1901-1934.

Year.	Deaths per 100,000 live births.	Deaths per 100,000 living.							
		Age 0-	1-	2-	3-	4-	5-	10-	15- 25 and up.
1901 ..	59	160	?	?	?	80	14	3	1
1902 ..	49	132	156	?	?	71	11	2	1
1903 ..	37	111	118	136	?	54	10	1	1
1904 ..	38	105	104	126	122	53	8	1	1
1905 ..	34	96	106	119	113	50	8	1	1
1906 ..	38	102	104	129	122	58	8	1	1
1907 ..	30	92	100	123	112	52	9	2	1
1908 ..	31	82	88	110	110	53	9	1	1
1909 ..	32	82	89	103	93	49	7	1	0
1910 ..	22	65	67	78	80	40	6	1	0
1911 ..	26	70	75	90	96	48	7	1	0
1912 ..	19	60	66	76	76	43	8	1	0
1913 ..	24	61	64	81	76	46	8	1	0
1914 ..	28	79	86	105	106	60	11	2	1
1915 ..	27	77	92	106	103	59	12	2	1
1916 ..	23	72	81	99	101	54	10	2	0
1917 ..	23	58	71	86	83	45	9	2	0
1918 ..	24	63	76	88	91	50	10	2	0
1919 ..	21	56	74	89	92	56	12	2	0
1920 ..	26	84	96	106	110	62	14	2	1
1921 ..	23	62	73	96	89	54	13	2	1
1922 ..	25	68	70	78	75	41	11	1	0
1923 ..	16	39	46	51	51	28	7	1	0
1924 ..	15	36	44	49	47	25	5	1	0
1925 ..	17	40	41	50	59	31	6	1	0
1926 ..	18	43	44	48	54	37	6	1	0
1927 ..	17	40	42	47	51	31	7	1	0
1928 ..	21	47	46	49	59	37	8	1	1
1929 ..	22	44	53	58	58	39	10	2	1
1930 ..	19	49	53	58	61	41	12	1	1
1931 ..	16	32	38	51	49	32	9	1	1
1932 ..	12	25	35	44	51	30	7	1	0
1933 ..	12	23	37	43	55	38	9	1	0
1934 ..	12	35	51	80	75	61	13	2	1

and the pre-school ages than in later childhood. The rates of 1933 expressed as percentages of the average rates in 1904-6 were 33, 23, 35, 34 and 46 for the first 5 years of life, and 71 at ages 5-10. The mortality amongst infants under 1 year reached the low rate of 12 per 100,000 live births in 1932 and has remained at that level since. In the second year of life the 1934 rate was above that of the three previous years and for the third year of life lower rates than in 1934 were registered in 1923-28 and 1931-33. At ages 3-4 mortality rose from 43 per 100,000 living in 1933 to 80 in 1934, and at 4-5 it rose to 75, these rates not having been exceeded since 1921. At 5-10 the average rates during the 6 quinquennial periods from 1901-30 have been 62, 50, 51, 53, 36 and 37, followed by 33 for the triennium 1931-3, but in 1934 a rate of 61 per 100,000 was recorded which has only once been exceeded since 1902, namely, in 1920. The same is true of the rate of 13 for children aged 10-15.

The changes which have taken place in the relative incidence of diphtheria mortality at the various ages (Table XLI) as a result of the more rapid fall in mortality risk at the earlier ages are considerable. There has been a progressive shifting of mortality risks towards the school age, so that whereas 30 years ago the danger at ages 1-5 was double that at 5-10, the rates in terms of that at 5-10 are now only 57 per cent. at 1-2, 84 at 2-3, 131 at 3-4 and 123 at 4-5. A similar progressive change in the age distribution of mortality risks from diphtheria in childhood has been noticed in Prussia.*

Table XXXVIII shows that diphtheria mortality was highest in North III, followed by North II, and lowest in Midland II and the East. For the country as a whole, outside London, the rate increased regularly with urbanisation, and the London rate was also in excess of that for London's Outer Ring. It seems probable that diphtheria is still much more freely notified in some sections of the population than in others. Thus the frequency of its notification has been greater in London than in any of the regions or density aggregates separated in this table or its predecessors in each of the years 1916-34, with the exception of 1931 when the London rate was exceeded in Wales II.

A contrast between North I and the other Northern regions, both as regards prevalence and mortality, has been evident in each of the years 1931 to 1934 as shown below :—

	Notifications per 100,000 living.				Deaths per million living at ages 0-15.				Deaths per 1,000 notified.			
	1931.	1932.	1933.	1934.	1931.	1932.	1933.	1934.	1931.	1932.	1933.	1934.
North I ..	64	51	72	160	136	67	128	357	62	41	53	68
North II ..	142	163	165	196	409	488	427	645	77	79	70	88
North III ..	119	131	163	276	371	330	447	756	79	64	67	67
North IV ..	141	147	147	196	372	379	380	521	66	64	64	65

* Reichsgesundheitsblatt X, Jan. 9, 1935, p. 24.

Table XLI.—Diphtheria Mortality at Various Ages of Childhood as percentage of the Rate at 5–10 Years. 1901–34.

Year.	0–	1–	2–	3–	4–	5–10	10–15
1901	74	200	?	?	?	100	17
1902	69	186	220	?	?	100	15
1903	69	206	218	252	?	100	19
1904	72	198	196	238	230	100	15
1905	68	192	212	238	226	100	16
1906	66	176	179	222	210	100	14
1907	58	177	192	237	215	100	17
1908	58	155	166	208	208	100	17
1909	65	167	182	210	190	100	14
1910	55	162	167	195	200	100	15
1911	54	146	156	187	200	100	15
1912	44	137	153	177	177	100	19
1913	52	133	139	176	165	100	17
1914	47	132	143	175	177	100	18
1915	46	131	156	180	175	100	20
1916	43	133	150	183	187	100	19
1917	51	129	158	191	184	100	20
1918	48	126	152	176	182	100	20
1919	37	100	132	159	164	100	21
1920	42	135	155	171	177	100	23
1921	43	115	135	178	165	100	24
1922	61	166	171	190	183	100	27
1923	57	139	164	182	179	100	25
1924	56	140	176	192	188	100	20
1925	55	126	132	158	190	100	19
1926	49	116	119	130	146	100	16
1927	52	129	135	152	165	100	23
1928	54	127	124	132	159	100	22
1929	56	113	136	149	149	100	26
1930	46	120	129	141	149	100	29
1931	50	100	119	159	153	100	28
1932	40	83	117	147	170	100	23
1933	32	61	97	113	145	100	24
1934	20	57	84	131	123	100	21

Recent bacteriological research suggests that under present conditions the fatality rate of an outbreak of diphtheria is largely dependent upon the proportion of cases infected by particular strains of *C. diphtheriæ* which may have a localised distribution. Table XLII is therefore introduced to show the trend, over a series of years, of prevalence and fatality indices in London, each county borough having a population exceeding 150,000 in 1931, and in the residue of each region surrounding these towns. Although local differences in the standard of notification of diphtheria may affect comparison of local rates in a given year, this factor is not likely to affect comparisons of the trend of prevalence or fatality in one town with the corresponding trend during the same period in another town. There are wide differences, both as regards prevalence and fatality, between towns of similar size and situation, such as Manchester and Liverpool, or Leeds and Sheffield.

Table XLII.—Diphtheria prevalence and fatality rates in Certain Large Towns and Regions, 1926 to 1934.

Notified Cases per 100,000 living.										Deaths per 1,000 Notified Cases.									
1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.		1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	
England and Wales	131	133	155	159	184	126	108	118	170	59	52	52	55	47	53	54	56	59	
South-East :—	296	271	275	268	303	195	188	225	281	40	32	33	30	34	31	38	37	40	
London Admin. County	155	122	223	194	169	90	48	91	181	103	39	66	53	39	(24)	96	78	57	
Croydon C.B.	407	310	360	317	255	151	97	77	136	70	65	61	33	27	35	(8)	(46)	86	
Portsmouth C.B.	204	150	194	214	232	122	119	161	419	58	39	58	68	69	60	(9)	(31)	28	
Southampton C.B.	221	302	342	265	282	120	105	182	291	19	42	32	48	40	31	40	105	61	
West Ham C.B.	113	124	161	156	168	102	65	74	124	53	52	57	59	47	50	51	56	59	
Remainder of South-East	73	78	96	95	78	42	55	33	137	82	67	(30)	48	(18)	(51)	(32)	(96)	61	
Newcastle-on-Tyne C.B.	49	72	104	79	144	90	61	39	82	(88)	128	(11)	(62)	56	63	42	51	69	
Sunderland C.B.	61	84	132	121	119	65	49	81	172	87	79	62	63	56	82	78	60	60	
Remainder of North I	250	253	225	279	280	361	534	473	333	24	43	31	44	54	54	42	60	60	
Kingston-upon-Hull C.B.	72	74	82	64	80	69	42	63	151	88	58	42	75	62	69	83	96	109	
Remainder of North II	114	116	97	139	117	82	106	129	288	58	103	68	122	55	(36)	45	39	52	
Bradford C.B.	79	91	133	110	207	203	183	216	455	69	64	33	47	54	88	54	83	70	
Leeds C.B.	201	164	159	146	134	80	79	189	272	52	38	40	45	29	(14)	(15)	20	30	
Sheffield C.B.	68	74	98	99	116	115	136	150	234	84	73	65	68	71	90	75	78	79	
Remainder of North III	87	105	90	67	167	152	172	241	472	(51)	(48)	(42)	(29)	103	102	39	41	38	
Birkenhead C.B.	66	79	61	40	45	25	24	60	54	121	71	153	(110)	(37)	(45)	(71)	(56)	116	
Bolton C.B.	175	191	218	267	462	375	384	340	338	72	52	52	58	59	59	56	60	61	
Liverpool C.B.	153	175	158	120	137	95	140	134	169	88	69	79	63	55	82	76	85	65	
Manchester C.B.	215	204	173	288	317	257	329	350	414	38	46	24	56	41	53	30	30	30	
Salford C.B.	85	97	99	113	124	98	91	96	155	75	63	68	67	63	68	77	69	74	
Remainder of North IV	247	211	218	238	235	178	117	83	156	50	31	33	36	37	35	30	38	53	
Birmingham C.B.	186	169	153	289	369	207	134	157	182	62	49	28	57	27	37	41	34	23	
Bristol C.B.	74	144	162	265	293	114	64	81	108	(53)	113	168	88	85	57	(27)	74	65	
Coventry C.B.	93	83	111	97	91	75	59	85	104	90	48	(19)	40	39	81	(31)	(30)	(21)	
Stoke-on-Trent C.B.	100	95	112	126	148	101	64	61	116	80	78	71	61	49	57	62	55	63	
Remainder of Midland I	152	127	188	104	83	47	32	140	192	106	35	41	51	(30)	(53)	(92)	38	43	
Leicester C.B.	238	355	346	259	255	99	51	56	76	108	66	47	83	50	(15)	(66)	(38)	(28)	
Nottingham C.B.	95	94	115	116	155	80	59	58	72	67	70	65	74	50	58	65	54	56	
Remainder of Midland II	53	61	133	126	107	86	78	69	66	52	65	51	64	59	67	64	65	72	
East	152	197	217	264	318	191	212	165	186	116	62	76	48	37	46	45	53	45	
South-West :—	47	46	81	113	159	82	66	63	70	49	63	59	69	56	51	52	61	55	
Plymouth C.B.	108	179	248	328	321	264	221	215	235	66	37	28	41	20	41	20	40	40	
Remainder of South-West	151	122	239	266	290	289	190	172	200	57	70	41	39	23	23	(29)	(32)	(24)	
Cardiff C.B.	142	123	163	179	238	163	136	144	215	66	64	70	71	52	57	62	72	82	
Swansea C.B.	82	115	93	107	234	229	165	153	165	57	48	74	70	54	51	56	59	57	
Remainder of Wales I	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wales II ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

NOTE.—In London, notifications are transferred to the area of residence, but this is not the case in other towns.

NOTE.—Rates in parentheses are founded upon less than 10 deaths.

A tabular analysis of the distribution of the fatality ratio in successive years since 1926 was made in the Review for 1933 (p. 54).

Table 10 shows that the counties, with over 100,000 population, with highest mortality in 1934 were Monmouthshire (218 per million), Bedfordshire (209) and Yorkshire, North Riding (187). The highest rates among county boroughs (average 125) were those for Merthyr Tydfil (626), Warrington (494) and Bootle (469).

Table XLIII.—Influenza Mortality per million Population during the first 3 and last 9 months of each Year, 1921-34.

	January–March.	April–December.
1921	356	198
1922	1,854	133
1923	240	214
1924	1,322	213
1925	783	175
1926	298	206
1927	1,827	147
1928	332	152
1929	2,450	173
1930	225	94
1931	958	167
1932	926	133
1933	1,995	97
1934	271	96

11. Influenza.—The deaths assigned to this cause numbered 5,619, 2,925 of males and 2,694 of females. The resultant crude mortality rate of 139 per million is reduced on standardization, by allowance for the increased age of the population, to 106 (Table 9), 122 for males and 91 for females (Table 8). Since the pandemic of 1918–19 this standardized rate is the lowest recorded, except in 1930.

Mortality in the March quarter of 1934 was 271 per million, this being a crude rate. As Table XLIII indicates, mortality in the latter nine months of the year has been subject to much slighter annual fluctuation than that in the first quarter.

The distribution of influenza mortality throughout the country is indicated in Table XLIV.

The highest regional rate is that for Wales II, followed by the South-West, Midland I and North I, while the lowest rates are those recorded for North III and Greater London. Mortality generally was highest in the rural districts, decreasing with urbanisation, though the rate in London Administrative County was higher than in the Outer Ring.

In these respects the mortality from influenza contrasts with the incidence of the epidemic diseases of childhood which follow an

almost constant rule of increase with urbanisation. In 18 of the 24 years, 1911–34, for which comparison is possible, the highest mortality from influenza has been recorded in the rural districts.

Table XLIV.—Influenza ; Mortality. Encephalitis Lethargica and Cerebro-spinal Fever ; Mortality, Prevalence and Fatality, 1934.

	In- fluenza.	Encephalitis Lethargica.			Cerebro-spinal Fever.		
	Deaths per Million Living.	Deaths per Million Living.	Cases per Million Living.	Deaths per 100 Cases Notified	Deaths per Million Living.	Cases per Million Living.	Deaths per 100 Cases Notified
England and Wales..	139	19	10†	192	18	27†	67
South-East	125	12	7	186	13	21	61
Greater London ..	119	10	5	202	15	25	58
Remainder of South- East	134	16	9	172	10	14	70
North.. ..	138	27	14	201	27	42	65
North I	167	34	12	275	40	54	75
„ II	129	21	16	129	21	43	49
„ III	105	21	7	284	28	46	62
„ IV	147	30	17	175	23	34	67
Midland	154	18	9	207	17	22	78
Midland I	167	17	10	182	17	18	91
„ II	129	18	7	275	18	30	62
East	122	23	13	179	9	14	62
South-West	170	21	17	122	12	17	69
Wales.. ..	166	18	7	237	14	16	83
Wales I	162	9	6	142	12	19	64
„ II	176	41	10	400	17	9	200
County boroughs* ..	127	22	13	174	23	38	60
Other urban districts*	148	23	11	208	16	21	77
Rural districts* ..	166	19	10	196	16	19	85
Greater Admin. Co.	128	9	7	124	18	34	54
London { Outer Ring	109	12	3	364	11	17	67

* Excluding Greater London.

† Including Port Sanitary Districts.

Complications of Influenza.—Deaths assigned to influenza in England and Wales are subdivided in Table 21 into four groups, No. 11(a)1 “with pneumonic complications,” No. 11(a)2 “with other respiratory complications,” No. 11(b)1 “with non-respiratory complications,” and No. 11(b)2 “without stated complications.” The percentage distribution in these groups at several ages is given in Table XLV both for 1933, an epidemic year, and for 1934 when influenza was at a low level. Deaths from pneumonic complications comprised about 45 per cent. of all influenza deaths at ages under 25 in 1934, compared with 61 per cent. in 1933. Amongst males over 25 and females over 65 the proportions at each age were virtually the same in the two years, but female deaths at 25–65 contained a

smaller proportion with pneumonic complications in 1934 than in 1933. Other respiratory complications comprised 18 and 21 per cent. in males and females respectively in 1934, compared with 24 and 27 per cent. in 1933, the proportion being lower at each age except for females under 25. Non-respiratory complications formed 26 per cent. in 1934 compared with 17 in 1933, a higher proportion being found in every sex and age group distinguished. The residual deaths, attributed to influenza without mention of any complications, formed 8 per cent. of all influenza deaths amongst males and 10 per cent. amongst females of all ages, but the proportions were considerably greater at ages over 75.

Comparison of the London deaths in 1933 with those for England and Wales as a whole reveals higher proportions with mention of pneumonia and lower proportions of influenza with no respiratory

Table XLV.—Deaths classed to Influenza with Various Complications, by Sex and Age. Numbers of deaths in London, 1933, and percentage of all Influenza deaths, England and Wales, 1933 and 1934.

		MALES.							FEMALES.						
		0-	5-	25-	45-	65-	75 & up.	All Ages.	0-	5-	25-	45-	65-	75 & up.	All Ages.
		Per cent. of total Influenza Deaths.													
<i>England and Wales, 1933.</i>															
11a1	With pneumonic complications..	60	61	69	56	43	31	52	62	61	63	53	40	30	45
11a2	„ other respiratory complica- tions	13	10	14	25	29	37	24	10	8	15	22	32	38	27
11b1	„ non-respiratory complica- tions	20	23	12	14	19	15	16	20	25	17	19	19	15	18
11b2	Without stated complications ..	7	6	5	5	9	17	8	8	6	5	6	9	17	10
<i>England and Wales, 1934.</i>															
11a1	With pneumonic complications..	41	50	67	56	43	30	50	43	44	55	45	41	28	41
11a2	„ other respiratory complica- tions	8	7	10	18	22	32	18	11	12	10	16	24	32	21
11b1	„ non-respiratory complica- tions	38	35	20	20	25	24	24	37	37	29	31	26	23	28
11b2	Without stated complications ..	13	8	3	6	9	14	8	9	7	6	8	9	17	10
		No. of deaths.													
<i>London Admin. County, 1933.</i>															
11a1	With pneumonic complications..	20	33	144	285	87	60	629	18	32	109	216	119	143	637
11a2	„ other respiratory complica- tions	3	4	20	114	44	60	245	3	6	24	51	63	144	291
11b1	„ cerebral vascular lesion ..	—	—	—	4	2	2	8	—	—	—	1	6	7	14
	„ nephritis	—	—	1	—	1	3	5	—	—	2	3	2	—	7
	„ other non-respiratory com- plications	4	12	8	23	32	17	96	10	5	16	42	34	49	156
11b2	Without stated complications ..	5	1	10	11	8	24	59	3	1	7	14	16	46	87
TOTAL classed to Influenza ..		32	50	183	437	174	166	1,042	34	44	158	327	240	389	1,192
		Per cent. of total Influenza deaths.													
11a1	With pneumonic complications..	62	66	79	65	50	36	60	53	73	69	66	50	37	54
11a2	„ other respiratory complica- tions	9	8	11	26	25	36	24	9	14	15	16	26	37	24
11b1	„ non-respiratory complica- tions	13	24	5	6	20	13	10	29	11	12	14	17	14	15
11b2	Without stated complications ..	16	2	5	3	5	15	6	9	2	4	4	7	12	7

complications. The numbers of deaths with mention of certain special causes in association with influenza amongst the London deaths in 1933 are stated below: encephalitis or encephalomyelitis 5, epilepsy 5, other nervous diseases (excluding cerebral vascular lesions) 48, peptic ulcers 6, peritonitis 4, other digestive diseases (including "gastric influenza") 37, diabetes 16. Some of these were mentioned in combination with respiratory complications and are included in groups 11(a)1 or 11(a)2.

15. Erysipelas.—Deaths attributed to erysipelas numbered 1,458, 789 of males and 669 of females, corresponding to standardized death-rates of 34 per million for males and 27 for females. These rates attained their lowest level in 1923, 15 and 14 respectively, but in recent years mortality has increased (Table 8). It may be noted that a similar course has been followed by the standardized rates for carbuncle and boil (No. 151), which have been higher since 1932 than in any of the preceding 14 years. The standardized rates for cellulitis (No. 152 : 1) have also increased for males from 13 in 1932 to 18 in 1934, and for females from 9 to 13. The rates for diseases of the ear and mastoid, fatal cases of which are almost entirely infective, have also risen from 35 for males and 26 for females in 1924 to 57 and 42 respectively in 1934.

At ages under 5 the erysipelas death-rate per 100,000 living was 9 in 1896–1900, 8 in 1901–5, 6 in 1906–10, 4 in 1915–20, and 3 in 1923, but then rose to 10 in 1933, with a slight improvement to 8 in 1934. In infants under 1 year the rate per 100,000 births fell from 33 in 1896–1900 to 11 in 1923, and then rose to 26 in 1932 and 40 in 1933, falling to 32 in 1934. At ages 5–25 there has been no increase since 1923, the rates being only 4 per million, whilst at ages over 25 standardized mortality has increased from 22 to 50 per million for males and from 18 to 32 for females.

The notification rate, which rose from 32 per 100,000 in 1923 to 45 in 1929 and 1930 and then declined to 36 in 1932, has risen again to 45 in 1933 and to the high level of 51 in 1934 (Table 26). When the county rates are compared, there is considerable variation both in the present rates and in the extent of the recent increase compared with the rate of ten years previously (Table XLVI). The mean annual rate of prevalence, as measured by notifications, was 26 per cent. higher in the country as a whole in 1931–34 than in 1921–24. The county rates in the 4 years 1921–24 ranged from 2 per 100,000 in Radnor, 10 in Anglesey and 11 in Rutland, the Isle of Wight and Cardigan, to 44 in the West Riding of Yorkshire and 46 in Northumberland. In 1931–34 the range was greater, namely from 8 in Anglesey and 13 in Pembroke to 62 in Durham and 66 in Northumberland. In 1934 the highest rates for counties (with their associated county boroughs) were registered in Durham, Northumberland, Huntingdon, Warwick, Cumberland and London.

The percentage increase or decrease in notified prevalence from 1921–24 to 1931–34 is shown for each county in the last column of

Table XLVI. When the 24 counties whose average rate in 1931-34 exceeded that of ten years previously by 40 per cent. or more are grouped together according to their geographical position, they fall into four areas, namely (a) the 4 most northerly counties, Northumberland, Durham, Cumberland and Westmorland; (b) Lincolnshire (Lindsey and Holland), Norfolk, Suffolk East, Rutland, Huntingdon and Bedford; (c) the Welsh border counties of Denbigh, Flint, Montgomery, Shropshire, Radnor, Hereford and Monmouth, with Cardigan and Glamorgan and (d) Surrey, Sussex East and West, and the Isle of Wight. The counties registering a decrease are Berkshire, Cambridge, Suffolk West, Cornwall, Somerset, Anglesey, Caernarvon, Merioneth, Carmarthen and Pembroke.

Comparison with the behaviour of puerperal fever notification rates in the same table reveals some suggestion of association. For the country as a whole the percentage increase of 26 for erysipelas was matched by an increase of 33 per cent. for puerperal fever. Of the 34 counties in which the erysipelas rate increased to a greater degree than in England and Wales the puerperal fever rate also increased to a greater extent than in England and Wales in 29, whilst in the remaining 29 counties this only occurred in 18. Such association as there is between the distributions of rates in 1931-34 is indicated in Table XLVII where the counties are arranged according to a scale of prevalence of each disease simultaneously.

The only county combining a high erysipelas rate with a low puerperal fever rate is Durham, but there are several which combine a low erysipelas rate with a high puerperal fever rate, namely Cardigan, Hereford, Isle of Wight, Suffolk East and Sussex West. The counties in which both rates are high are Northumberland and the West Riding of Yorkshire, and those characterised by low rates for both diseases consist mainly of a number of Welsh counties and Cornwall, where notification may be less complete than elsewhere, an East Midland area comprising Cambridge, Ely, Rutland, Lincoln (Holland) and Suffolk West, and a South Midland group consisting of Buckingham, Berkshire, Wiltshire, Gloucester, Dorset and Somerset.

Table XLVI does not suggest any relation between the rise or fall during the ten years of erysipelas and of scarlet fever. Of 35 counties in which the scarlet fever rate was lower in the second period, 18 showed an increase in their erysipelas rates in excess of that in England and Wales, whilst of the 28 remaining counties (in which scarlet fever prevalence rose) 16 fell into that category. Distribution of the counties according to their rates for both diseases in 1931-34 shows that in no county was a high erysipelas rate combined with a low scarlet fever rate, and only in Monmouth was a low erysipelas rate combined with a high scarlet fever rate. The counties showing specially high rates of prevalence of both diseases were London, Durham, Northumberland and the West Riding of Yorkshire.

Table XLVI.—Case-Rates of Puerperal Fever, Scarlet Fever and Erysipelas. 1921-24 and 1931-34. Increase or decrease per cent.

COUNTY (including County Boroughs).	Puerperal Fever.			Scarlet Fever.			Erysipelas.		
	Cases per 1,000 live births.		Increase or decrease (—) per cent. of 1921-4 rate.	Average annual rate per 1,000 living.		Increase or decrease (—) per cent. of 1921-4 rate.	Average annual rate per 1,000 living.		Increase or decrease (—) per cent. of 1921-4 rate.
	1921-4.	1931-4.		1921-4.	1931-4.		1921-4.	1931-4.	
ENGLAND & WALES	2.80	3.72	33	2.72	2.79	3	.34	.43	26
Bedfordshire ..	1.42	4.78	237	1.30	1.90	46	.16	.35	119
Berkshire ..	2.02	2.82	40	2.68	1.97	— 26	.27	.25	— 7
Buckinghamshire ..	0.90	2.66	196	2.12	1.74	— 18	.22	.23	5
Cambridgeshire ..	2.69	2.98	11	1.52	2.48	63	.28	.19	— 32
Cheshire ..	2.99	2.70	— 10	2.81	1.87	— 33	.29	.36	24
Cornwall ..	1.07	2.14	100	0.85	1.48	74	.19	.15	— 21
Cumberland ..	1.70	1.86	9	1.92	1.42	— 26	.27	.49	81
Derbyshire ..	2.64	3.14	19	2.28	1.70	— 25	.33	.39	18
Devonshire ..	1.88	4.07	116	1.39	2.07	49	.24	.25	4
Dorsetshire ..	2.00	2.71	36	1.17	1.04	— 11	.22	.25	14
Durham ..	1.57	2.19	39	2.99	4.62	55	.38	.62	63
Ely, Isle of ..	1.79	1.68	— 6	1.78	1.60	— 10	.26	.30	15
Essex ..	2.35	3.16	34	2.76	3.41	24	.34	.41	21
Gloucestershire ..	2.92	2.09	— 28	2.73	1.70	— 38	.33	.33	0
Herefordshire ..	1.75	4.98	185	1.26	1.22	— 3	.18	.28	56
Hertfordshire ..	1.98	3.31	67	1.97	1.92	— 3	.21	.29	38
Huntingdonshire ..	1.42	4.07	187	1.23	3.83	211	.21	.37	76
Kent ..	1.93	2.90	50	2.19	2.36	8	.26	.35	35
Lancashire ..	3.89	3.91	1	3.10	2.86	— 8	.43	.52	21
Leicestershire ..	1.79	2.59	45	1.69	2.62	55	.31	.42	35
Lincolnshire—									
Parts of Holland	0.52	1.92	289	1.31	1.92	47	.14	.28	100
Parts of Kesteven	0.46	3.19	593	0.94	2.18	132	.19	.26	37
Parts of Lindsey	1.27	3.76	196	1.19	1.60	34	.22	.35	59
London ..	3.55	4.26	20	3.94	3.87	— 2	.43	.58	35
Middlesex ..	2.97	4.39	48	3.54	3.31	— 6	.31	.37	19
Norfolk ..	1.48	2.03	37	2.55	1.94	— 24	.24	.35	46
Northamptonshire ..	2.96	4.67	58	3.66	1.98	— 46	.33	.42	27
Northumberland ..	1.85	4.78	158	2.99	4.86	63	.46	.66	43
Nottinghamshire ..	2.04	2.61	28	1.83	1.95	7	.34	.42	24
Oxfordshire ..	2.76	4.60	67	2.68	1.48	— 45	.26	.36	38
Peterborough,									
Soke of ..	1.71	4.07	138	1.57	1.62	3	.30	.32	7
Rutlandshire ..	0.76	—	—	1.41	0.73	— 48	.11	.28	155
Shropshire ..	2.99	4.38	46	1.95	1.67	— 14	.17	.26	53
Somersetshire ..	1.79	2.44	36	1.65	1.24	— 25	.30	.29	— 3
Southampton ..	1.96	3.22	64	2.64	2.39	— 9	.22	.30	36
Staffordshire ..	3.32	3.48	5	2.98	2.15	— 28	.40	.42	5
Suffolk, East ..	3.28	6.73	105	1.72	2.75	60	.19	.30	58
Suffolk, West ..	2.73	2.32	— 15	0.95	1.67	76	.22	.17	— 23
Surrey ..	2.15	3.26	52	2.63	2.39	— 9	.24	.34	42
Sussex, East ..	1.61	3.68	129	1.76	1.71	— 3	.22	.33	50
Sussex, West ..	1.86	7.08	281	1.85	2.75	49	.12	.26	117
Warwickshire ..	5.54	5.06	— 9	2.87	2.82	— 2	.38	.46	21
Westmorland ..	1.12	4.45	297	2.28	1.68	— 26	.19	.33	74
Wight, Isle of ..	1.12	4.68	318	2.11	0.99	— 53	.11	.27	145
Wiltshire ..	1.55	2.42	56	1.88	1.63	— 13	.19	.24	26
Worcestershire ..	1.52	3.18	109	2.22	2.56	15	.26	.26	0
Yorkshire—									
East Riding ..	2.48	2.56	3	1.21	1.97	63	.28	.34	21
North Riding ..	0.97	4.39	353	2.82	3.31	17	.34	.44	29
West Riding ..	3.58	4.78	34	2.59	3.22	24	.44	.51	16
York, C.B. ..	1.20	3.42	185	2.71	2.99	10	.29	.40	38
Anglesey ..	0.77	1.70	121	1.41	0.85	— 40	.10	.08	— 20
Brecknockshire ..	2.93	2.64	— 10	1.18	1.34	14	.19	.22	16
Caernarvonshire ..	0.87	2.31	166	1.18	0.81	— 31	.20	.16	— 20
Cardiganshire ..	2.95	4.72	60	1.53	1.31	— 14	.11	.16	45
Carmarthenshire ..	1.94	2.78	43	2.11	1.45	— 31	.22	.21	— 5
Denbighshire ..	1.81	3.99	120	1.99	2.03	2	.20	.33	65
Flintshire ..	1.45	4.10	183	2.46	1.90	— 23	.16	.29	81
Glamorganshire ..	2.39	6.16	158	3.10	3.17	2	.25	.40	60
Merionethshire ..	0.95	1.66	75	1.38	0.72	— 48	.25	.22	— 12
Monmouthshire ..	1.92	2.36	23	3.00	4.71	57	.22	.34	55
Montgomeryshire ..	1.93	3.78	96	1.58	0.66	— 58	.28	.41	46
Pembrokeshire ..	3.65	1.66	— 55	0.91	1.64	80	.14	.13	— 7
Radnorshire ..	1.19	3.90	228	1.69	1.40	— 17	.02	.22	1,000

Table XLVII.—Erysipelas and Puerperal Fever, 1931–34. Distribution of Counties (including associated County Boroughs).

Erysipelas cases per 1,000 living. (England and Wales ·43.)					
	·05–	·20–	·35–	·50–	·65–
0– ..	-	Rutland.			
1·5– ..	Cambridge. Cornwall. Suffolk, West. Anglesey. Caernarvon. Pembroke.	Berkshire. Buckingham. Dorset. Ely. Gloucester. Lincs., Holland. Somerset. Wiltshire. Yorks, E. Riding. Brecknock. Carmarthen. Merioneth. Monmouth.	Cheshire. Cumberland. Kent. Leicester. Norfolk. Nottingham.	Durham.	
3·0– ..		Devon. Hertford. Lincs., Kesteven. Soke of Peterboro' Shropshire. Southampton. Surrey. Sussex, East. Westmorland. Worcester. Denbigh. Flint. Radnor.	Derby. Essex. Huntingdon. Lincs., Lindsey. Middlesex. Stafford. Yorks, N. Riding. York C.B. Montgomery.	Lancashire. London.	
4·5– ..	Cardigan.	Hereford. Isle of Wight.	Bedford. Northampton. Oxford. Warwick.	Yorks, W. Riding.	Northumberland.
6·0– ..		Suffolk, East. Sussex, West.	Glamorgan.		

16. **Acute Poliomyelitis.**—Deaths, including those from acute polioencephalitis, numbered 135, compared with 202 in the preceding year. The standardized death rate for males was 5 and for females the rate was 4 per million. The cases notified were 590 of poliomyelitis and 81 of polioencephalitis.

The death-rate at ages under 15 was 9 per million. This rate ranged from 9 to 16 in each of the periods 1911–20 and 1921–30, and was 13 per million in 1932 and 1933. The distributions of deaths according to age are compared in 1911 and 1926 when the rate reached 16 per million, in a pair of years 1920 and 1923 when the rate was 9 and in each of the last four years, in Table XLVIII.

An increase is noticeable in the proportion of deaths at adult ages over 25, which is greater than can be accounted for by the increasing proportion of persons living at these ages (51 per cent. in 1911, 59 in 1931). Although there is no evidence of any progressive change since 1911 in the age-distribution amongst children, the percentage of deaths at ages under 5 has declined since 1931.

Table XLVIII.—Acute Poliomyelitis and Polioencephalitis deaths at various ages per cent. of all ages, 1911, 1920 and 1923, 1926, 1931–34.

Year.	Rate per million at 0–15.	No. of deaths (all ages).	Percentage at different ages.							
			0–	1–	5–	10–	15–	25–	45 & up.	All ages.
1911	16	224	9	35	23	12	11	6	4	100
1920, 1923	9	253	17	30	15	12	13	8	5	100
1926	16	235	8	33	18	9	21	8	3	100
1931	7	98	21	28	9	12	18	10	2	100
1932	13	178	6	27	20	15	16	11	5	100
1933	13	202	6	26	16	15	17	15	5	100
1934	9	135	4	21	19	16	15	15	10	100

Proportionate distributions according to age of the notified cases of poliomyelitis and polioencephalitis in London (extracted from the Public Health Reports of the County Medical Officer of Health) are shown below for 1926–29 and 1930–34, and for comparison the distributions of cases in Denmark in the periods 1920–25 and 1926–32, and in the epidemic years 1933 and 1934.

		No. of cases.	0–	5–	10–	15–	20–	25 & up.	All ages.
London	{ 1926–29	279	53	17	18		12		100
	{ 1930–34	322	54	24	7	6	2	7	100
Denmark*	{ 1920–25	530	48	34		18			100
	{ 1926–32	527	41	36		23			100
	{ 1933	356	31	50		19			100
	{ 1934	4,711	18	46		36			100

* From Statistics furnished by the National Health Service of Denmark.

It is evident that, although there has been no recent change of any significance in the age-distribution of notified cases in London, yet in Denmark where major epidemics of the disease have occurred recently there has been a fall in the proportion of notified cases at ages under 5 and a corresponding increase at the later ages. A similar phenomenon has been noticed in New York†. This may be due to increased recognition during epidemics of the numerous aparalytic cases of the disease, especially amongst older children, which are almost impossible to identify at other times. The resulting drop in the fatality ratios of deaths assigned to poliomyelitis in Denmark to the notified cases, at ages 0–4, 5–14 and 15 and over,

† New York Dept. of Health, Quarterly Bulletin, Vol. III, 1935, No. 4.

during the epidemic year 1934 when compared with the ratios in 1933 is seen below :

	0-4.		5-14.		15 and over.		All ages.			
	1933.	1934.	1933.	1934.	1933.	1934.	1920-25.	1926-32.	1933.	1934
Cases ..	112	845	176	2,168	68	1,698	530	527	356	4,711
Deaths ..	11	13	21	37	8	57	117	65	40	107
Ratio per cent.	9·8	1·5	11·9	1·7	11·8	3·4	22·1	12·3	11·2	2·3

There has been in progress during recent years in that country, coincident with increasing attention to the aparalytic manifestations of the disease, a fall in the fatality ratio, and from 1933 to 1934 that fall was more pronounced at ages under 15 than for adults.

For this reason also fatality ratios of deaths to notified cases, without distinction of age, tend to have an inverse relation to morbidity rates, and similar considerations may perhaps account for the regular seasonal fluctuation of the fatality ratio in England and Wales, shown in Table XLIX.

Table XLIX.—Acute Poliomyelitis and Polioencephalitis. Cases per day and deaths per 100 cases notified in each month, 1921-25, 1926-30, 1931-34. Ratio of Polioencephalitis to Poliomyelitis cases in each month, 1921-30.

		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
		Notifications per day.											
Acute polio- myelitis and polio- encephalitis	1921-25	·86	·76	·71	·60	·83	·79	1·60	2·66	3·51	3·03	2·05	1·06
	1926-30	1·31	1·36	·99	·89	·82	·86	1·82	3·30	4·78	4·85	3·04	1·67
	1931-34	1·00	·87	·68	·83	·84	1·34	1·57	2·75	4·08	3·98	2·06	1·21
	Deaths per 100 notifications.												
	1921-25	40	42	58	57	37	46	24	16	15	20	21	36
	1926-30	31	29	40	40	43	40	21	18	16	17	19	29
	1931-34	33	45	44	38	35	30	22	18	18	14	19	37
	Ratio of polioencephalitis to poliomyelitis cases.												
	1921-25	36	36	54	57	30	42	19	10	13	17	17	30
	1926-30	27	21	26	33	34	33	15	13	12	14	15	23
Poliomyelitis alone.	1921-25	36	36	54	57	30	42	19	10	13	17	17	30
	1926-30	27	21	26	33	34	33	15	13	12	14	15	23
		Ratio of polioencephalitis to poliomyelitis cases.											
1921-30		·18	·15	·17	·28	·25	·20	·13	·10	·08	·12	·10	·13

The morbidity rate, as measured by the average number of cases notified per day in each month, rises sharply from about 0·8 in May to about 3 in August and 4 in September, and begins to fall again sharply in November (*see also* Table 27). The fatality ratio, which ranges about 40 per cent. during the first six months, falls suddenly in July, reaching a level around 17 in August, September and October, and returns again to 30 or 40 per cent. in December. The sudden drop in July is no doubt partly due to the time lag between the

new cases arising and the deaths resulting from them, but increasing recognition of the slighter cases as the summer advances may also be reflected in the lowered ratio. There is at the same time a considerable decline in the ratio of cases described as polioencephalitis to those described as poliomyelitis, from about a quarter in the second quarter of the year to one-tenth or less. When poliomyelitis cases and deaths are analysed with exclusion of polioencephalitis, the fatality ratio manifests an even more pronounced fall in the summer than does the combined rate.

17. Encephalitis Lethargica.—Deaths attributed to this disease numbered 788, 356 of males and 432 of females, yielding standardized death-rates of 16 per million for males and 18 for females. The male rate is the lowest since 1923 (Table 8). The 411 notifications (Table 28) show a decline for the tenth year in succession, and are considerably less than deaths, yielding a fatality ratio of 1,917 deaths per 1,000 notifications, compared with 1,887 in 1933 and 1,463 in 1932. This ratio was 279 in 1924, and then rose in each successive year to 1,471 in 1931.

Table XLIV shows that mortality was highest in Wales II and North I, whereas in London mortality and prevalence were, as usual, below the general average.

18. Cerebro-spinal Fever (*Meningococcal Meningitis*).—Deaths from this cause numbered 729. Of these 433 were of males and 296 of females, corresponding to standardized rates of 28·5 and 19·8 per million. These rates show a further decline from the high rates reached in 1931, the fall continuing at each age distinguished in Table L.

Notifications in 1934 numbered 1,094 (Table 28), this having been exceeded only in 1915, 1916, 1917, 1931, 1932 and 1933. The numbers in the preceding 5 years were 667, 674, 2,216, 2,136 and 1,695. The fatality ratio was 67 per 100 cases, the ratios in the 5 years preceding being 88, 94, 65, 57 and 56. In times of high prevalence, when attention is directed to the disease, notification statistics probably furnish a more complete record of the total number of persons attacked than at other times.

Prevalence was greatest from January to June (Table 27), mortality being highest in January (Table 23).

The mortality distribution manifested, as in 1933, a higher rate in the towns than the rural districts, and in London than in the Outer Ring. Table XLIV also shows that, as in the two preceding years, both mortality and prevalence increased in general from South to North, mortality being highest in North I, followed by North III and North IV, and lowest in the East and remainder of South-East.

23-32. Tuberculosis.—The deaths assigned to tuberculous affections in the aggregate numbered 30,882—17,448 of males and 13,434 of females—2,377 less than those so classified in the previous year.

Table L.—Cerebro-spinal Fever, 1911-34: Mortality at Various Ages per Million Living and per cent. of that in 1915-17.

Year.		Males.					Females.				
		All Ages*	0-5	5-15	15-25	25 and up*	All Ages*	0-5	5-15	15-25	25 and up*
Mortality rate per million.											
1915-17†	.. ..	69.8	148.2	45.3	135.3	35.2	31.6	122.7	36.5	24.8	10.5
1931	.. ..	54.7	218.7	51.2	54.1	17.5	37.2	172.6	45.8	17.4	9.3
1932	.. ..	46.4	209.6	36.0	42.6	13.6	31.8	153.0	31.5	16.3	9.5
1933	.. ..	35.2	172.9	26.7	28.5	8.8	27.3	139.5	27.6	12.9	6.4
1934	.. ..	28.5	135.3	23.8	22.0	7.8	19.8	107.3	17.9	7.7	4.7
Mortality rate per cent. of that in 1915-17.†											
1911-14†	.. ..	17	43	26	4	5	31	45	24	16	14
1915-17†	.. ..	100	100	100	100	100	100	100	100	100	100
1918	.. ..	55	57	54	59	48	55	56	63	49	46
1919	.. ..	39	64	49	28	24	51	56	52	46	39
1920	.. ..	27	60	47	10	9	46	56	39	51	25
1921	.. ..	21	52	28	5	11	36	50	28	28	21
1922	.. ..	18	44	25	7	5	32	49	23	20	9
1923	.. ..	13	31	19	3	6	27	32	27	29	11
1924	.. ..	15	34	21	6	6	24	31	21	16	15
1925	.. ..	18	44	29	6	4	29	39	26	19	14
1926	.. ..	19	50	27	5	5	30	45	14	24	19
1927	.. ..	24	63	30	6	8	34	44	37	19	18
1928	.. ..	23	60	28	6	10	39	54	30	27	22
1929	.. ..	33	83	38	14	11	50	71	45	27	18
1930	.. ..	34	76	52	13	15	58	86	46	25	27
1931	.. ..	78	148	113	40	50	118	141	125	70	89
1932	.. ..	66	141	79	31	39	101	125	86	66	90
1933	.. ..	50	117	59	21	25	86	114	76	52	61
1934	.. ..	41	91	53	16	22	63	87	49	31	45

* Standardized. † The rates used for 1911-14 and 1915-17 are mean annual rates for those years.

The standardized death-rate resulting from these figures, 740 per million persons (males 832, females 657), is the lowest yet recorded (Table 9), being 59 per million below the previous lowest rate recorded in 1933, the male rate being 69 per million lower and the female rate 50 per million lower than in that year.

The improvement on the preceding year was limited, as Table LI shows, to ages under 65 for males, and under 5 and 10-75 for females.

Table LI.—Mortality from Tuberculosis (All Forms) per Million Population, 1912-14, 1932, 1933 and 1934.

		Males.				Females.				Persons.			
		1912-14	1932	1933	1934	1912-14	1932	1933	1934	1912-14	1932	1933	1934
All Ages	Crude	1,571	972	968	899	1,169	713	692	638	1,364	837	824	76
	Standardized	1,542	913	901	832	1,174	727	707	657	1,349	815	799	74
0-	.. ..	2,081	833	701	642	1,717	666	584	555	1,900	750	643	599
5-	.. ..	572	239	236	219	580	247	211	231	576	243	224	225
10-	.. ..	447	216	188	184	687	278	288	232	568	247	237	208
15-	.. ..	939	727	675	603	1,226	1,075	1,020	955	1,084	901	847	779
20-	.. ..	1,501	1,203	1,189	1,094	1,381	1,343	1,313	1,253	1,439	1,275	1,252	1,175
25-	.. ..	1,816	1,116	1,150	1,043	1,403	1,034	1,065	982	1,599	1,074	1,107	1,012
35-	.. ..	2,189	1,273	1,308	1,150	1,374	752	764	664	1,767	991	1,014	887
45-	.. ..	2,384	1,496	1,529	1,461	1,185	574	539	520	1,762	1,002	997	954
55-	.. ..	2,213	1,310	1,320	1,250	967	503	457	423	1,553	884	863	811
65-	.. ..	1,378	825	794	841	752	402	397	359	1,031	591	575	575
75 and up	.. ..	586	354	331	391	440	281	221	221	498	309	263	287

Table LII.—Mortality from Tuberculosis in 1934, per cent. of that in 1912-14 and 1922-24.

		1922-24 per cent. of 1912-14.		1934 per cent. of 1912-14.		1934 per cent. of 1922-24.	
		Males.	Females.	Males.	Females.	Males.	Females.
All Ages	Crude	78	81	57	55	73	67
	Stand- ardized.	77	81	54	56	70	69
0-	.. ..	57	57	31	32	54	57
5-	.. ..	65	68	38	40	59	59
10-	.. ..	75	77	41	34	55	44
15-	.. ..	91	105	64	78	70	74
20-	.. ..	104	110	73	91	70	82
25-	.. ..	85	91	57	70	68	77
35-	.. ..	79	75	53	48	66	64
45-	.. ..	73	68	61	44	84	65
55-	.. ..	68	71	56	44	83	62
65-	.. ..	75	78	61	48	81	61
75 and up	.. ..	69	80	67	50	97	63

In Table LII the mortality of the year under review is compared at each age with the rates of some 20 years earlier, in 1912-14, and with the rates of 1922-24. The mortality in 1934 is expressed in each instance as a percentage of the rate at the beginning of the period and the fall from 1912-14 to 1922-24 is also shown.

For children under 5 the relative fall was about the same since 1922-4 as in the preceding decade, whilst at 5-45 for males and at all ages over 5 for females the relative decline has been much greater in the second period. For males at ages over 45, however, the rate of improvement has not been maintained since.

It was pointed out in the Review for 1932 that the tuberculosis death-rate of young adult females had not declined since 1914 to any satisfactory extent, the rate at ages 20-25 for 1930-32 being about 2 per cent. below the level of 1912-14. The 1934 rate shows a fall to 9 per cent. below that level or 18 per cent. below the 1922-4 level.

The 25,682 deaths from *respiratory tuberculosis* form 83 per cent. of the total allocated to tuberculosis, and 5.4 per cent. of those from all causes.

The trend since 1921 of mortality rates from tuberculosis of the respiratory system for young adults aged 15-25 and 25-35 may be compared in Table LIII with that of the equivalent average death-rate* at all ages up to 65 for the same sex.

* Rate in a population containing equal numbers at each age, see page 2.

Table LIII.—Phthisis Mortality Rates per 100,000 living at ages 15–25, 25–35 and Equivalent Average Rates at all ages under 65 ; 1921–1934.

	Males.			Females.		
	15–25	25–35	0–65 Equivalent average rates.	15–25	25–35	0–65 Equivalent average rates.
1921	101	139	115	127	121	80
1922	103	143	116	124	117	78
1923	96	140	108	119	117	74
1924	96	136	109	121	115	74
1925	90	135	110	121	112	72
1921–25 ..	97	139	112	123	117	76
1926	83	126	101	114	107	66
1927	84	123	102	116	112	69
1928	83	118	98	113	106	64
1929	85	119	104	117	109	66
1930	81	112	95	111	105	63
1931	84	111	96	110	103	63
1932	80	102	89	107	95	58
1933	79	105	90	105	97	58
1934	72	94	83	99	91	53

Males show a decrease in mortality risk since 1921–25 amounting to 26 per cent. at ages 15–25, compared with 32 at ages 25–35 and 26 per cent. in the equivalent average risk at all ages under 65. The corresponding rates of improvement for females have been 20 per cent. at 15–25, 22 at 25–35 and 30 at ages under 65. From 1926 to 1931 the rates for young adults aged 15–25 did not change appreciably for males, and improved to only a slight extent for females, but the last three years have witnessed a more satisfactory decline, from 84 to 72 and from 110 to 99 respectively. It may be that the arrested fall in phthisis mortality of young adults, which has been commented upon in recent Reviews, was an aftermath of the effects of the food shortage of 1916–18 upon children, resulting in a lowered average resistance to active tuberculosis of the lungs as these children reached the danger period of young adult life.

Mortality statistics of different regions and of groups of towns, classified according to different social indices, clearly show that the arrest which was evident up to 1931 was most pronounced in the industrial areas and in the towns where social conditions, as evidenced by a high average of persons per room, were least satisfactory. Thus it was found (Table XLII of 1932 Review) that when the areas with over 1 per room average density were grouped together, phthisis mortality of females aged 15–25 had increased from 1911 to 1930–32 by 25 per cent. in the county boroughs and 21 per cent. in the counties, whilst in London with a mean density about 1 per

room it increased by 16 per cent. At densities of .85–1 per room the towns showed no change and the counties an increase of 15 per cent., but at densities below .85 per room both showed improvement of the order of 20 per cent. On the other hand, at ages 25–45 the fall in mortality was not confined to the better-housed areas, but occurred almost irrespective of density.

The distribution of phthisis mortality by regions and by class of area as well as by sex and age is shown in Table LIV.

Table LIV.—Tuberculosis of Respiratory System : Mortality per 100,000 Living at different Ages in different Areas, 1934.

	England and Wales.	Greater London.	London Administrative County.	South-East, excluding Greater London.	North.	Midland.	East.	South-West.	Wales.	County Boroughs outside Greater London.	Other Urban Districts outside Greater London.	Rural Districts outside Greater London.
MALES.												
All Ages—												
Crude ..	76	87	102	67	79	73	59	64	76	96	64	50
Standardized..	67	74	87	58	70	64	54	57	71	84	57	45
0— ..	8	9	14	2	10	9	10	6	7	11	6	6
5— ..	5	6	8	2	6	4	4	3	8	6	5	4
15— ..	72	75	84	57	77	67	66	61	95	90	62	55
25— ..	94	96	109	89	94	95	82	92	107	118	88	65
35— ..	107	111	127	106	112	99	89	101	104	131	96	77
45— ..	139	167	196	117	147	137	93	102	121	180	115	76
55— ..	118	151	182	103	122	118	70	82	101	156	89	71
65— ..	76	112	142	58	73	71	65	56	76	90	57	55
75 & up ..	31	49	60	26	35	32	16	19	9	52	19	13
FEMALES.												
All Ages—												
Crude ..	52	51	54	44	54	53	46	44	74	61	48	44
Standardized..	51	48	50	43	54	52	46	44	76	60	48	45
0— ..	6	4	4	4	10	4	2	3	5	10	4	3
5— ..	8	6	8	7	11	6	9	5	11	11	8	7
15— ..	99	93	94	68	108	97	83	76	165	114	93	85
25— ..	91	82	85	86	90	93	82	88	135	103	88	82
35— ..	60	55	55	57	60	62	70	56	74	68	56	56
45— ..	46	48	56	38	45	54	37	41	61	57	40	36
55— ..	36	36	43	33	34	41	25	34	58	42	34	32
65— ..	28	25	29	26	31	27	37	23	36	35	25	26
75 & up ..	16	25	21	16	14	8	18	7	28	13	16	12

The relation of phthisis mortality to urbanisation is manifested by the contrast between the standardized rate for males from 84 per 100,000 in the county boroughs outside Greater London and 87 in London itself, and that of 45 in the rural districts. For females the effect of urbanisation is not so great, the rates being 60 in the county boroughs, 50 in London, and 45 in the rural districts.

The regional distribution indicates that for males the standardized rate is highest in Greater London, Wales and the North, whilst for

females it is much higher in Wales than elsewhere, and below the general average in Greater London. For males this rate is lowest in the East and South-West and for females in the South-East outside Greater London. The Welsh rates are below the corresponding England and Wales rate for children under 5, and for males over 35, but show a large excess at ages 15–25, amounting to 32 per cent. for males and 67 per cent. for females, and at ages 25–35, amounting to 14 for males and 48 for females. The favourable position of the South-East excluding Greater London is also most manifest at ages 15–25, the male rate being 21 per cent. and the female rate 31 per cent. below the average for the country as a whole.

Table LV indicates the change since 1931 in phthisis mortality rates at 15–25 and 25–35, and in the equivalent average rates under 65, in each region and class of area.

The recent decline in the young adult rates has been as great in the towns as in the country districts, and has occurred in every region. The North, Wales and Greater London manifest the greatest relative fall for males aged 15–25, and the South-West and East show the greatest improvement for females of that age.

The ratios of male to female mortality in 1934 present considerable contrasts in the various regions, as shown below.

		Male mortality per cent. of female.					
		15–	25–	35–	45–	55–	65–75
Greater London		81	117	202	348	419	448
Remainder of		84	103	186	308	312	223
South-East							
North .. ..	..	71	104	187	327	359	235
Midland .. ..	..	69	102	160	254	288	263
East .. ..	..	80	100	127	251	280	176
South-West ..	..	80	105	180	249	241	243
Wales .. ..	..	58	79	141	198	174	211

In each of the years 1931, 1932, 1933 and 1934 the highest ratios at 25–35 and 55–65 have occurred in Greater London, whilst at 15–25 and 35–45 either Greater London or the South-East has given the highest figure and at 45–55 and 65–75 either Greater London or the North. The lowest ratios at 25–35, 35–45, 45–55 and 55–65 have been evident in the East or Wales.

Amongst counties of over 100,000 population the lowest crude death-rates from phthisis were those of Cambridgeshire, 337; Yorkshire, East Riding, 390; Derbyshire, 394; Lincolnshire, Kesteven, 403; Oxfordshire, 411; and Dorsetshire, 415.

The highest county borough rates were those of South Shields, 1,268; Gateshead, 1,098; Middlesbrough, 1,096; and Bootle, 1,081. The Burton-upon-Trent rate, 475, was lowest.

The rapidity with which *non-respiratory* tuberculosis mortality in general continues to fall may be gathered from the fact that during the eleven years covered by Table 8 the standardized rate for each sex has fallen without interruption, from 252 to 163 for males, or by

35 per cent., and from 226 to 145 for females, or by 36 per cent., the percentage decline for the respiratory form of the disease in the same period being 26 for males and 28 for females. The proportion of non-respiratory to total (standardized) mortality was 23 per cent. in 1924 and 21 in 1934.

Table LV.—Phthisis Mortality at certain ages in 1934 per cent. of 1931—Regions and Density aggregates.

	MALES.			FEMALES.		
	15-25.	25-35.	0-65*.	15-25.	25-35.	0-65*.
ENGLAND AND WALES ..	86	85	87	90	88	84
Greater London	84	81	88	93	88	84
Remainder of South-East ..	93	92	93	88	96	88
North	84	83	84	88	89	83
Midland	85	86	85	93	88	84
East	97	87	87	81	73	78
South-West	86	95	90	75	79	81
Wales	84	81	83	93	89	92
County Boroughs } Outside	86	92	86	88	89	84
Urban Districts } Greater	81	82	85	89	89	85
Rural Districts.. } London	93	77	87	89	84	84

* Equivalent average death rate in 1934 per cent. of 1931.

The standardized death-rate from tuberculosis of the intestines and peritoneum declined further (Table 8) to a new low record of 23 per million for males and females. The standardized rates for tuberculosis of the nervous system were 75 for males and 73 for females, compared with 75 and 71 in 1933.

To tubercular otitis media and mastoiditis 45 deaths were assigned in the quinquennium 1921-25, 50 in 1926-30 and 29 in the four years 1931-34.

Deaths assigned to No. 31 (1), tuberculosis of the adrenals, numbered 23 in 1934. "Addison's disease", if not specified as tuberculous, is classed to No. 68, diseases of the adrenals, and the numbers of deaths classed to each of these groups since 1921 have been :

		1921-25	1926-30	1931	1932	1933	1934
No. 31 (1) Tuberculosis of adrenals.	{ M	19	21	11	11	12	10
	{ F	8	16	7	11	6	13
No. 68 (part) "Addison's disease" (unqualified)	{ M	439	435	76	58	79	71
	{ F	623	705	123	125	133	133

During 1921-30 29 deaths were assigned to tubercular pericarditis in the residual group, and 11 in 1931-34, but it must be remembered that if phthisis is mentioned in conjunction with tuberculosis of another site the death is assigned to the former.

34. **Syphilis.**—Deaths assigned to this cause numbered 1,234, 838 of males and 396 of females. In the four years 1931–34 the deaths classed to congenital syphilis have totalled 412, 365, 296 and 261, and those classed to acquired or unspecified syphilis have numbered 1,034, 938, 1,025 and 973. Standardized mortality of males declined from 77 per million in 1871–80 to 58 in 1901–10, increased to 74 in 1917 and 1920, declined again to 39 in 1925, rose to 50 in 1928 and has again fallen to 36 in 1934. Female mortality followed a similar course, from 70 in 1871–80 to 45 in 1901–10, rising to 56 in 1920 and falling to 25 in 1925, followed by a temporary increase to 29 in 1927 and subsequent fall to 18 in 1934.

Standardized death-rates for syphilis, tabes dorsalis, general paralysis of the insane and aneurysm from 1911 to 1928 were set out in the Review for 1928 (Table XLIX) and this series is continued in Table LVI for 1911–20 and each year since.

Table LVI.—Standardized Mortality per million living from Syphilis and Diseases of Syphilitic Origin, 1911–34.

	1911–20.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.
MALES.															
34. Syphilis	68	64	50	48	42	39	43	45	50	45	45	45	39	39	36
80. Tabes Dorsalis	29	26	29	26	26	25	26	26	25	29	22	20	23	21	17
83. General Paralysis of Insane	86	59	65	64	55	56	51	54	49	42	40	40	35	31	32
96. Aneurysm	42	35	36	34	35	34	32	36	37	37	38	38	36	35	36
Total	225	184	180	172	158	154	152	161	161	153	145	143	133	126	121
FEMALES.															
34. Syphilis	48	48	37	30	28	25	26	29	28	26	25	24	23	21	18
80. Tabes Dorsalis	5	5	5	5	4	5	4	5	4	5	4	4	5	4	3
83. General Paralysis of Insane	17	12	13	12	12	11	11	11	10	10	8	10	9	9	8
96. Aneurysm	9	8	8	8	7	9	9	9	9	10	10	10	11	13	13
Total	79	73	63	55	51	50	50	54	51	51	47	48	48	47	42

Expressing 1934 mortality rates as percentages of 1911–20, the extent of the improvement is indicated below.

	Syphilis.	Tabes.	G.P.I.	Aneurysm.	Total.
Males ..	53	59	37	86	54
Females ..	37	60	47	144	53

The increase in female mortality from aneurysm contrasts with the favourable trend for the other syphilitic diseases.

Gummata or syphilitic tumours were mentioned in connection with 142 of the deaths of males and 91 of the deaths of females assigned to syphilis during 1931–33, these being distributed by age as follows :

	0–	15–	25–	35–	45–	55–	65 and up.	All ages.
Brain { M	3	1	3	2	10	16	9	44
{ F	1	2	3	5	16	9	2	38
Other { M	4	1	3	8	33	20	29	98
organs { F	2	3	2	5	15	13	13	53

44 (1 and 2). **Vaccinia and Sequelæ of Vaccination.**—Five deaths have been assigned to the heading of Vaccinia in 1934, from the following causes. A male aged 6 with “broncho-pneumonia supervening on encephalitis following vaccination”, a male aged 7 with “encephalitis accelerated by vaccination”, a female aged 7 with “non-suppurative encephalitis”, a male aged 18 with “encephalitis due to vaccination”, and a female aged 20 with “post-vaccinal encephalomyelitis”.

Two deaths have been classed to the group “other sequelæ of vaccination”, but neither was the result of vaccination against smallpox. In the title of this group “Vaccination” is interpreted in its wide sense to include the administration of vaccines for the prevention of diseases other than smallpox, the disease, if not smallpox, being specified by a footnote in all tables where such deaths appear under this heading. One of these two deaths was that of a male aged 13 attributed to “shock following the injection of a foreign protein” administered for protection against scarlet fever during an outbreak of that disease. The other death, of a male aged 30, was attributed to “toxæmia and heart failure due to effects of anti-rabic treatment” which had been carried out in India after a bite from a rabid dog.

The deaths of a male infant aged 3 months from gastro-enteritis and otitis media, of a female infant aged 4 months from pneumonia, and of a male aged 8 months from convulsions due to furunculosis and adenitis, all occurring within a fortnight of vaccination but without evidence of causal association, were assigned to gastro-enteritis, furunculosis and pneumonia respectively. In each of the above cases the vaccination or protective treatment included under that term was mentioned on the death certificate.

Another death, stated to be due to pyelocystitis, of a male aged 5 months, found on inquiry to have been due to *B. Coli* infection and to have followed vaccination, but without evidence of causal association, was classed to cystitis.

44 (part of 6). **Pink Disease.**—The 68 deaths classed to the group of “other infectious or parasitic diseases” in 1934 consisted of 4 attributed to glandular fever, 3 to blackwater fever, 1 to acute infective polyneuritis, 1 to infective mononucleosis, 1 to acrodynia, 14 to erythrœdema or erythrœdema polyneuritica, and 45 to “pink disease”. The disease of infancy and early childhood described by the synonyms pink disease, erythrœdema, erythrœdema polyneuritica, dermato-neuritis or polyneuritis, or acrodynia, was included from 1931 onwards in this group by a decision of the International Conference of 1929, although its ætiology was at that time, and still is, obscure. In 1927 it had been included in the group of other general diseases (No. 69 : 3) in the Annual Reviews, and in the “Nomenclature of Diseases, 1931” it was likewise placed amongst the group of “diseases due to disorders of nutrition or of metabolism.” In 1923 a death was attributed to acrodynia and during the next 7

years 16 deaths were so described, but this name has rarely been seen on death certificates of recent years. Dermato-polyneuritis (or dermato-neuritis) under which synonym 9 deaths were described during 1925-30, has also ceased to appear. In 1924 2 deaths were ascribed to "erythroedema polyneuritis" (with mention also of "pink disease" on one) and erythroedema polyneuritica has continued in use since, "erythroedema" being a more usual description since 1926. Deaths attributed to "pink disease" have steadily increased since 1927, as indicated in Table LVII and when all forms of description are combined the annual deaths have risen continuously from 1 in 1923 to 59 in 1934.

Table LVII.—Deaths from Pink Disease, and its Synonyms. 1923-34.

	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.
Acrodynia	1	2	1	5	2	1	4	1	—	—	1	—
Dermato-polyneuritis or neuritis	—	—	1	1	2	2	2	1	—	—	—	—
Erythroedema polyneuritica or polyneuritis	—	2	2	3	4	1	2	8	2	—	1	4
Erythroedema	—	—	—	6	8	9	9	3	6	7	7	10
Pink disease	—	—	4	5	4	8	11	20	25	36	45	45
Total	1	4	8	20	20	21	28	33	33	43	54	59

The distribution of the deaths in 1931-34 by age and sex, distinguishing those in hospitals or nursing homes from those which occurred elsewhere, has been as follows :

		0—	1—	5—	10 and over.	All ages.
Males	{ Institution	50	25	—	—	75
	{ Private ..	13	12	1	2	28
Females	{ Institution	38	25	—	—	63
	{ Private ..	12	11	—	—	23

45-53. Cancer.—The deaths ascribed to cancer during 1934 numbered 63,263—29,777 of males and 33,486 of females. For both sexes these numbers are the highest yet recorded.

Of these deaths 55,232 were referred to carcinoma, 2,754 to sarcoma, and 5,277 to "cancer" not otherwise defined. These are the largest numbers yet recorded for carcinoma, but not for sarcoma, which of late years has accounted for a somewhat smaller proportion, now 44 per 1,000, of the total cancer deaths than heretofore. The number in the undefined group continues to fall year by year.

The standardized death-rate for males in 1934 amounts to 1,046 per million, and that for females to 974. In 1928 the increase in female mortality was arrested and the rate decreased each year to 966 in 1932, but again shows a slight rise in 1933 and 1934. Table XLI,* in the 1927 volume, shows that the standardized

* This table gives standardized death-rates from Cancer by Sex for each year 1851-1927.

rate for males first exceeded that for females in 1924, and since that date the excess has been maintained, increasing to 86 per million in 1932. The crude death-rate is seen from Table 7 to be still in excess for females to the extent of 56 per million living in 1934, compared with 105 ten years earlier, this being due to the greater age of the female population.

For sarcoma the crude rate is 68 per million as against 71, 68, 66, 69 and 68 in the five previous years. When standardized there is a considerable male excess, the rate being 62·4 for males and 44·2 for females in 1934.

The mortality from cancer as a whole is compared by sex and age in Table LVIII for England and Wales, with record of the degree of difference in sex mortality at the various ages.

At ages from 25 years up to 55 the female exceeds the male rate but from 55 years to the end of life the male rates are in excess. This female excess in middle age, greatest at 35–45, is associated with, and largely explained by, the special frequency at this age of cancer of the uterus and of the female breast, which together account for a larger proportion of the total deaths of women from cancer at each age between 25 and 65 than at all ages jointly (*see* “Text” Volume of the Review for 1929, page 57).

Table LVIII.—Mortality from Cancer (All Sites), 1934.

	Mortality per Million.			Sex Ratio.		
	Males.	Females.	Persons.	Males.	Females.	Persons.
All Ages { Crude ..	1,534	1,590	1,563	981	1,017	1,000
{ Standardized	1,046	974	1,003	1,043	971	1,000
0—	50	35	43	1,163	814	1,000
5—	20	18	19	1,053	947	1,000
15—	46	37	41	1,122	902	1,000
25—	126	154	140	900	1,100	1,000
35—	433	734	596	727	1,232	1,000
45—	1,654	2,098	1,893	874	1,108	1,000
55—	4,674	4,139	4,390	1,065	943	1,000
65—	10,113	7,571	8,711	1,161	869	1,000
75—	14,208	11,754	12,707	1,118	925	1,000

The percentage share of the breast and uterus in the total cancer mortality of females, in 1934, was :—

All ages	0—	25—	35—	45—	55—	65—	75—	85—
33·3	3·1	34·7	50·3	46·7	35·7	26·4	23·3	25·6

The mortality attributed to sarcoma, carcinoma and cancer undefined is distinguished in Table LIX, other details of the deaths being shown in Tables LXI and LXII. The rates for cancer undefined are lower than the average of the six preceding years at every age over 25, indicating increased precision in the statement

of the type of cancer. Sarcoma rates are lower than in 1928-33 at ages over 15 for males, and at 15-45, 55-65 and 75 and over for females. Carcinoma rates show an increase at all ages over 15 for males, and at all ages over 25 for females.

Table LIX also shows the trend of cancer mortality by sex and age since 1901-10.

TABLE LIX.—Cancer Mortality in 1911-20, 1921-30, 1933 and 1934 per cent. of that in 1901-10. Sarcoma, Carcinoma and Undefined: rates per million in 1928-33 and 1934.

	Mortality per cent. of the rate in 1901-10.*				Mortality per million living.					
					Sarcoma.		Carcinoma.		Cancer undefined.	
	1911-20	1921-30	1933	1934	1928-33	1934	1928-33	1934	1928-33	1934

MALES.

All ages—										
Crude.. ..	128	167	193	198	80	78	1,204	1,324	150	132
Standardized..	114	128	132	133	66	62	862	895	108	89
0-	96	100	113	121	22	26	2	2	1	1
15-	107	112	100	112	32	29	12	13	2	4
25-	101	106	106	116	37	33	72	87	8	6
35-	102	101	109	105	68	63	328	338	37	32
45-	108	105	106	107	128	123	1,332	1,400	155	131
55-	114	121	118	120	212	209	3,970	4,075	478	390
65-	120	143	148	151	290	247	8,673	8,962	1,117	905
75 and up ..	124	162	183	180	315	265	12,077	12,591	1,616	1,352

FEMALES.

All ages—										
Crude.. ..	114	135	152	155	58	59	1,295	1,402	155	129
Standardized..	102	105	103	103	45	44	838	851	100	79
0-	100	111	121	121	19	19	2	2	1	2
15-	103	106	133	112	21	20	15	15	2	2
25-	92	94	89	91	25	22	120	121	12	11
35-	93	90	86	87	43	42	637	638	66	55
45-	98	92	89	90	87	90	1,812	1,832	197	177
55-	99	96	94	94	143	136	3,554	3,675	419	328
65-	107	116	114	114	187	194	6,692	6,778	847	599
75 and up ..	116	143	148	149	225	197	10,410	10,525	1,333	1,031

* The rates per 100,000 at 1901-10, 1911-20, 1921-30 and 1931 were given in Table XLII of the Review for 1931. The percentage ratios in this table are based upon rates per million, that is to say, upon an additional significant figure, and therefore differ slightly from those given in previous years.

The crude death-rate at all ages for males in 1934 is 98 per cent. and the female rate 55 per cent. higher than the respective rates in 1901-10, but if standardized rates are compared these excesses are reduced to 33 and 3 per cent. respectively. These great differences in the rate of increase as shown by comparing crude and standardized rates emphasize the desirability of restricting comparison to rates corrected for the changing age of the population. The standardized figures take into account the rapidly increasing proportion of elderly

persons in the population and attempt to correct, though imperfectly owing to the wide divergence of the age constitution of the present population from that of the 1901 standard, the exaggerated impression conveyed when crude rates are compared. The equivalent average death-rates (E.D.R.) for each sex at ages under 65, that is to say the rates which would occur in populations consisting of equal numbers at each year of age up to 65, combined with the rates at 65–75 and 75 and over, provide a more complete picture of cancer mortality, unaffected by differences in age constitution between the populations which have to be compared. These equivalent average death-rates are readily calculated by finding the arithmetic mean of the death-rates at the 13 quinquennial age groups between 0 and 65. (*See* p. 2.)

The recent trend of the sex death-rates at the several age-groups over 25 and of the equivalent average rates is indicated below, the rates per million being expressed as percentages of the 1901–10 rate in each instance.

Males	1926	1927	1928	1929	1930	1931	1932	1933	1934
25—	108	108	113	111	102	107	106	106	116
35—	96	102	103	104	107	102	102	109	105
45—	106	104	105	102	106	106	101	106	107
55—	122	120	121	119	116	119	123	118	120
65—	145	149	149	149	152	153	155	148	151
75 and up	164	167	172	181	178	173	179	183	180
E.D.R. 0–65	116	114	116	113	112	114	116	114	115
Females									
25—	96	95	98	93	90	89	94	89	91
35—	88	90	93	87	88	87	86	86	87
45—	91	90	93	89	88	92	90	89	90
55—	97	94	94	93	94	93	93	94	94
65—	120	116	118	122	117	114	112	114	114
75 and up	142	148	152	156	157	149	148	148	149
E.D.R. 0–65	95	93	94	92	92	92	92	92	92

Comparison of the last few years with the preceding years indicates that for males the equivalent rate at ages under 65 has not shown any consistent change in the last 9 years, and for females, after a decline to 92 per cent. of the 1901–10 level by 1929, it has remained stationary for six years. At ages 65–75 the average male rate in the last triennium was the same as in the preceding one and at ages over 75 was only slightly greater, whilst the female rates at these ages have remained almost stationary since 1931.

Cancer mortality is analysed according to sex, age, region and class of area in Table LX. The standardized rate for each sex declines, as noticed in previous years, from a maximum in the county boroughs to a minimum in the rural districts, the range

Table LX.—Cancer (All Sites) : Mortality per 100,000 Living in different Areas and at different Ages, 1934.

	England and Wales.	Greater London.	London Admin. County.	South-East, exclu- ding Greater London.	North.	Midland.	East.	South-West.	Wales.	County Boroughs outside Greater London.	Other Urban Dis- tricts outside Greater London.	Rural Districts outside Greater London.
MALES.												
All Ages—												
Crude	153	155	176	161	151	146	161	170	144	159	150	147
Standardized ..	105	112	122	96	109	102	93	96	102	115	101	89
0— ..	5	5	4	4	4	5	13	3	7	5	6	5
5— ..	2	1	1	1	2	3	1	5	3	2	3	2
15— ..	5	4	4	5	4	6	4	5	2	5	5	4
25— ..	13	13	15	11	13	12	6	15	17	13	12	12
35— ..	43	52	59	39	44	38	34	42	42	47	38	37
45— ..	165	181	196	146	172	159	138	157	165	185	155	133
55— ..	467	500	557	418	506	456	394	369	446	529	445	371
65— ..	1,011	1,069	1,157	893	1,073	1,030	943	914	960	1,125	991	849
75 and up ..	1,421	1,530	1,614	1,505	1,381	1,325	1,310	1,441	1,382	1,430	1,407	1,352
FEMALES.												
All Ages—												
Crude	159	156	169	177	154	148	178	190	150	158	160	163
Standardized ..	97	97	103	93	102	94	96	94	101	102	96	92
0— ..	4	4	6	6	4	2	2	3	2	3	4	2
5— ..	2	2	2	3	1	1	1	2	2	2	2	1
15— ..	4	3	4	4	3	4	6	5	4	3	4	6
25— ..	15	17	17	11	18	12	14	12	18	17	14	13
35— ..	73	75	75	67	77	71	68	68	76	77	72	67
45— ..	210	211	222	201	213	210	217	202	214	220	210	190
55— ..	414	408	431	388	439	393	411	408	432	445	406	381
65— ..	757	731	784	722	800	731	751	743	827	782	751	754
75 and up ..	1,175	1,218	1,298	1,168	1,192	1,169	1,123	1,112	1,125	1,188	1,164	1,134

according to urbanization, as thus measured, being greater for males, 115 to 89, than for females, 102 to 92. The London rates for males (122) and females (103) are in excess of those for the county boroughs.

These relations suggest that cancer may be more often certified in the towns because hospital and other facilities for its recognition are there greatest, but successful treatment, particularly of cancer of the breast and uterus, in so far as it reduces mortality, tends to affect the rates in the opposite sense.

Apart from Greater London, the North gives the highest standardized mortality for males and for females, whilst the East shows the lowest rate for males and the South-East excluding Greater London for females. The regional dispersion thus indicated is greater for males, 93–112, than for females, 93–102.

Cancer by Site.—The parts of the body affected by fatal cancer in 1934 are shown in Tables LXI and LXII in greater detail than that provided by the international classification, six out of its nine headings (Nos. 45–53) being sub-divided. Fuller details with regard to cancer of the uterus and of the skin than those shown in

Table LXI.—Sites and Forms of Fatal Cancer by Sex and Age, 1934.

	All Ages.	0–	5–	15–	25–	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85–
DEATHS OF MALES.																
All Sites	29,777	73	68	147	415	410	708	1,364	2,449	3,818	4,892	5,528	4,925	3,173	1,364	443
Carcinoma	25,709	6	5	41	235	296	577	1,139	2,090	3,302	4,292	4,877	4,386	2,826	1,195	392
Sarcoma	1,509	63	61	93	116	76	86	110	173	198	191	157	98	55	29	9
Cancer, N.S. ..	2,559	4	2	13	20	38	45	115	186	318	409	494	441	292	140	42
45 { Lip	297	1	—	—	1	—	3	2	10	22	38	39	69	47	40	25
Tongue	1,108	—	—	—	3	2	7	24	70	165	213	283	176	111	42	12
Mouth	334	—	—	—	2	3	1	7	20	32	70	85	55	38	16	5
Tonsil	238	—	—	—	5	2	4	7	11	40	51	38	48	23	9	—
Jaw	409	1	4	1	4	4	10	16	20	54	61	79	74	53	23	5
Pharynx	405	—	2	2	—	7	1	11	31	50	82	93	70	45	8	3
Others (1)	209	—	2	1	1	—	1	9	10	21	42	40	42	27	13	—
Total	3,000	2	8	4	16	18	27	76	172	384	557	657	534	344	151	50
46 { Oesophagus	1,761	—	—	—	3	5	13	37	121	250	365	396	316	180	64	11
Stomach	6,579	—	—	5	92	114	212	381	629	893	1,060	1,210	1,046	639	243	55
Small intestine ..	106	—	2	3	3	5	7	4	18	13	18	12	11	6	2	2
Cæcum	275	—	1	—	7	5	11	17	18	29	34	53	53	35	8	4
Hepatic flexure ..	44	—	—	—	—	1	2	2	5	4	6	6	9	6	2	1
Splenic flexure ..	94	—	—	—	1	1	2	3	11	16	14	19	11	8	8	—
Sigmoid flexure ..	673	—	—	—	6	8	11	25	30	88	113	120	125	77	47	23
Large intestine (colon)	2,394	—	—	8	27	21	35	71	147	244	357	492	447	369	136	40
Rectum (excluding anus)	3,196	—	—	9	38	26	65	116	207	388	575	659	564	359	151	39
Liver	1,164	4	—	2	12	15	21	41	86	136	177	229	220	128	66	27
Gall bladder	248	—	—	—	1	1	2	10	19	33	43	43	50	31	10	5
Pancreas	946	—	—	—	12	19	17	50	101	119	151	176	166	82	38	15
Others (2)	522	7	2	4	12	10	7	24	35	57	68	93	93	69	32	9
Total	18,002	11	5	30	214	229	403	784	1,413	2,275	2,976	3,514	3,112	1,994	811	231
47 { Larynx	913	—	—	—	—	3	10	44	78	155	196	179	124	89	26	9
Lung (3)	2,095	1	1	14	45	63	128	233	345	404	356	239	158	81	21	6
Others (4)	244	—	4	4	3	7	6	17	35	41	42	41	25	13	4	2
Total	3,252	1	5	18	48	73	144	294	458	600	594	459	307	183	51	17
50 Breast	53	—	—	—	1	1	3	2	4	5	12	7	12	3	2	1
51 { Kidney, Suprarenal ..	402	33	10	3	15	13	18	24	49	62	69	48	33	19	5	1
Bladder, Urethra, Ureter	980	1	—	—	4	4	21	39	85	124	165	186	174	115	44	18
Prostate	1,639	—	1	1	1	2	3	12	52	105	217	331	439	289	147	39
Testis	148	3	1	9	36	15	15	11	13	10	11	10	7	4	2	1
Penis	193	—	—	—	1	3	2	3	17	18	31	28	39	26	17	8
Scrotum	69	—	—	—	—	—	—	4	3	12	9	11	18	6	5	1
Total	3,431	37	12	13	57	37	59	93	219	331	502	614	710	459	220	68
52 Skin	627	1	1	3	7	5	9	19	29	39	60	81	113	106	91	63
53 { Brain, Meninges ..	141	4	10	8	18	13	9	21	21	20	9	5	1	2	—	—
Thyroid	67	—	1	—	1	—	2	4	9	15	9	17	5	3	1	—
Bones (jaw excepted) ..	431	6	13	42	31	11	21	32	49	68	53	47	31	15	8	4
Others (5) and unspecified	773	11	13	29	22	23	31	39	75	81	120	127	100	64	29	9
Total	1,412	21	37	79	72	47	63	96	154	184	191	196	137	84	38	13

(1) Includes Palate, Cheek (internal surface), Salivary Glands, Gums.

(2) „ Intestine undefined, Peritoneum, Omentum, Mesentery, Anus.

(3) „ Pleura.

(4) Mediastinum.

(5) Includes Lymphatic Glands, Abdomen, Eye, Muscle, etc.

Table LXI.—cont.

		All Ages.	0-	5-	15-	25-	35-	40-	45-	50-	55-	60-	65-	70-	75-	80-	85-
DEATHS OF FEMALES.																	
All Sites		33,486	50	60	118	530	819	1,413	2,373	3,277	3,997	4,737	4,836	4,789	3,617	1,919	951
Carcinoma		29,523	3	5	48	416	705	1,233	2,059	2,873	3,531	4,224	4,335	4,282	3,231	1,713	865
Sarcoma		1,245	42	49	65	76	58	70	104	138	151	136	126	121	61	36	12
Cancer, N.S. ..		2,718	5	6	5	38	56	110	210	266	315	377	375	386	325	170	74
45	Lip	28	—	—	—	—	—	1	2	—	1	3	5	6	3	4	3
	Tongue	131	—	—	—	—	4	4	6	9	18	26	16	17	14	11	6
	Mouth	41	—	—	—	1	—	1	1	7	3	8	6	3	6	5	—
	Tonsil	36	—	—	—	1	—	1	2	4	5	7	3	4	3	3	3
	Jaw	177	1	4	2	8	1	2	7	20	21	27	28	25	16	9	6
	Pharynx	92	—	—	2	4	2	2	9	8	19	12	13	8	8	3	2
	Others (1) ..	37	—	1	1	2	1	—	—	3	1	5	5	6	9	3	—
Total		542	1	5	5	16	8	11	27	51	68	88	76	69	59	38	20
46	Esophagus	681	—	—	—	3	5	29	48	68	94	109	98	93	81	40	13
	Stomach	5,640	—	—	5	59	85	109	230	425	592	827	993	1,017	766	369	163
	Small intestine ..	83	—	1	—	2	4	1	4	8	9	6	15	18	7	5	3
	Cæcum	397	—	—	1	4	1	10	12	20	44	52	79	67	60	34	13
	Hepatic flexure ..	51	—	—	—	—	—	1	4	3	4	7	10	12	6	2	2
	Splenic flexure ..	99	—	—	1	2	3	1	10	7	7	11	17	17	15	6	2
	Sigmoid flexure ..	766	—	—	1	19	19	22	37	63	87	110	131	106	103	45	23
	Large intestine (colon)	3,118	—	—	5	30	50	83	128	189	282	385	474	608	469	276	139
	Rectum (excluding anus)	2,046	—	1	4	50	41	59	91	147	220	304	311	349	265	134	70
	Liver	1,238	1	2	3	8	13	28	51	81	116	162	210	235	176	106	46
	Gall bladder	617	—	—	1	2	5	7	19	50	59	100	94	124	87	50	19
	Pancreas	841	—	—	3	1	13	19	37	62	114	151	144	137	98	36	26
	Others (2)	779	8	1	5	8	9	19	45	38	80	121	122	126	107	60	30
Total		16,356	9	5	29	188	248	388	716	1,161	1,708	2,345	2,698	2,909	2,240	1,163	549
47	Larynx	246	—	1	—	2	7	17	23	44	35	33	28	22	23	7	4
	Lung (3)	680	1	—	4	23	26	37	64	72	84	127	96	78	46	18	4
	Others (4)	131	1	1	2	3	3	9	9	15	16	26	19	10	14	3	—
Total		1,057	2	2	6	28	36	63	96	131	135	186	143	110	83	28	8
48 Uterus		4,451	1	—	5	93	169	337	538	604	659	613	552	451	266	124	39
49	Ovary	1,519	—	4	18	43	60	118	178	240	219	212	168	139	82	28	10
	Vulva	417	—	—	1	3	8	10	22	35	42	51	77	60	60	31	17
	Others	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total		1,936	—	4	19	46	68	128	200	275	261	263	245	199	142	59	27
50 Breast		6,687	—	—	1	91	221	395	653	842	901	943	818	720	571	327	204
52 Skin		460	—	—	4	8	5	10	14	22	37	38	41	57	76	80	68
53	Brain, Meninges ..	120	8	8	4	11	10	10	16	18	17	7	4	3	4	—	—
	Thyroid	184	—	—	2	4	3	2	13	16	20	39	34	25	15	8	3
	Kidney, suprarenal ..	308	19	11	4	7	7	10	16	31	30	43	50	35	31	9	5
	Bladder, Urethra ..	394	—	—	—	4	5	14	16	24	43	61	48	79	52	33	15
	Bones (jaw excepted) ..	359	—	16	19	18	17	23	19	36	41	40	40	52	22	13	3
Others (5) and unspecified		632	10	9	20	16	22	22	49	66	77	71	87	80	56	37	10
Total		1,997	37	44	49	60	64	81	129	191	228	261	263	274	180	100	36

(1) Includes Palate, Cheek (internal surface), Salivary Glands, Gums.

(2) " Intestine undefined, Peritoneum, Omentum, Mesentery, Anus.

(3) " Pleura.

(4) Mediastinum.

(5) Includes Lymphatic Glands, Abdomen, Eye, Muscle, etc.

the Table are also available. The cancer mortality distribution is shown by sex, age and site as well as by the nature of the growth to which the deaths were attributed, under the headings carcinoma, sarcoma and "cancer" not otherwise defined. Continuing the

Table LXII.—Forms of Fatal Cancer of each Site—1934.

				MALES.						FEMALES.					
				Number of Deaths.			Percentage of all Cancers.			Number of Deaths.			Percentage of all Cancers.		
				Carcinoma.	Sarcoma.	"Cancer." Not otherwise defined.	Carcinoma.	Sarcoma.	"Cancer." Not otherwise defined.	Carcinoma.	Sarcoma.	"Cancer." Not otherwise defined.	Carcinoma.	Sarcoma.	"Cancer." Not otherwise defined.
All Sites.. ..				25,709	1,509	2,559	86	5	9	29,523	1,245	2,718	88	4	8
45	Lip			285	—	12	96	—	4	27	—	1	96	—	4
	Tongue			1,022	—	86	92	—	8	113	1	17	86	1	13
	Mouth			307	—	27	92	—	8	37	1	3	90	2	8
	Tonsil			192	17	29	81	7	12	28	7	1	78	19	3
	Jaw			293	83	33	72	20	8	113	50	14	64	28	8
	Pharynx			352	15	38	87	4	9	77	4	11	84	4	12
	Others			192	3	14	92	1	7	33	4	—	89	11	—
Total				2,643	118	239	88	4	8	428	67	47	79	12	9
46	Esophagus			1,616	—	145	92	—	8	612	—	69	90	—	10
	Stomach			6,101	6	472	93	0	7	5,245	3	392	93	0	7
	Small intestine			77	13	16	73	12	15	73	4	6	88	5	7
	Cæcum			249	1	25	91	0	9	378	—	19	95	—	5
	Hepatic flexure			39	—	5	89	—	11	47	—	4	92	—	8
	Splenic flexure			87	—	7	93	—	7	93	—	6	94	—	6
	Sigmoid flexure			634	—	39	94	—	6	719	1	46	94	0	6
	Large intestine (colon)			2,242	—	152	94	—	6	2,897	4	217	93	0	7
	Rectum (excluding anus)			2,981	6	209	93	0	7	1,893	4	149	93	0	7
	Liver			1,014	13	137	87	1	12	1,041	14	183	84	1	15
	Gall bladder			217	1	30	88	0	12	562	—	55	91	—	9
	Pancreas			871	3	72	92	0	8	758	4	79	90	1	9
	Others			368	62	92	70	12	18	583	73	123	75	9	16
Total				16,496	105	1,401	92	0	8	14,901	107	1,348	91	1	8
47	Larynx			827	1	85	91	0	9	222	3	21	90	1	9
	Lung			1,785	101	209	85	5	10	574	40	66	84	6	10
	Others			130	48	66	53	20	27	62	34	35	47	26	27
Total				2,742	150	360	84	5	11	858	77	122	81	7	12
48. Uterus				—	—	—	—	—	—	4,033	72	346	90	2	8
49	Ovary			—	—	—	—	—	—	1,303	41	175	85	3	12
	Vulva			—	—	—	—	—	—	392	8	17	94	2	4
	Others			—	—	—	—	—	—	—	—	—	—	—	—
Total				—	—	—	—	—	—	1,695	49	192	88	2	10
50. Breast				50	—	3	94	—	6	6,199	30	458	93	0	7
51	Kidney, suprarenal ..			145	216	41	36	54	10	—	—	—	—	—	—
	Bladder, urethra, ureter			885	7	88	90	1	9	—	—	—	—	—	—
	Prostate			1,392	4	243	85	0	15	—	—	—	—	—	—
	Testis			79	52	17	53	35	12	—	—	—	—	—	—
	Penis			186	—	7	96	—	4	—	—	—	—	—	—
	Scrotum			65	—	4	94	—	6	—	—	—	—	—	—
Total				2,752	279	400	80	8	12	—	—	—	—	—	—
52. Skin				565	50	12	90	8	2	394	53	13	85	12	3
53	Brain, meninges			14	109	18	10	77	13	16	85	19	13	71	16
	Thyroid			65	—	2	97	—	3	180	3	1	98	2	0
	Kidney, suprarenal ..			—	—	—	—	—	—	103	165	40	33	54	13
	Bladder, urethra, ureter			—	—	—	—	—	—	359	3	32	91	1	8
	Bones (jaw excepted) ..			59	346	26	14	80	6	56	290	13	16	80	4
	Others			323	352	98	42	45	13	301	244	87	47	39	14
Total				461	807	144	33	57	10	1,015	790	192	50	40	10

practice of many years past, every practicable effort is made, with the co-operation of certifying practitioners, to assign the deaths to the organs primarily affected, in order to obtain as true indications as possible of the incidence of the disease. It is well recognized, however, that for certain organs, especially the liver and lung, commonly affected secondarily to such a degree that the symptoms dominate any that may arise from the primarily affected organ, ascertainment of the latter may prove impracticable. Such exceptions are becoming more rare, due no doubt to improvement in diagnostic methods, an encouraging sign justifying the inclusion, in the notes to certifying medical practitioners which accompanies the book of death certificates, of the request that "the seat of primary occurrence should be returned in all cases where known."

The distribution of cancers of each individual site, according to the nature of the growth, is given in Table LXII. The percentage of cancers with nature undefined is, amongst the organs distinguished, highest for the liver, prostate, ovary and brain. The percentage of all cancers defined as sarcoma ranges from 80 for the bones, 74 for the brain, 54 for kidney or suprarenal and 35 for the testis to less than 1 per cent. for the digestive tract and female breast.

The facts as to cancer mortality distribution by sex, age and site contained in Table LXI are summarized for each site in Table LXIII, which compares total mortality in 1934 with the rates for other recent periods for the same sex and site. In this table the tendency to increase of mortality merely in consequence of increase in the proportion of persons at risk falling within those ages at which cancer chiefly occurs, as well as the tendency to female excess for the same reason, has been allowed for by standardization, so that all the rates quoted may be compared with one another.

The chief increases in 1934 over the previous year are, for males—lung 8·5 per million, lip 1·8, tongue 1·7, kidney and suprarenals 1·7, œsophagus 1·6, and for females—lung 2·7, ovary and Fallopian tube 2·6, rectum and anus 2·5, uterus 1·3.

The sites showing at least 25 per cent. increase in mortality from 1911–20 to 1934 are, for males, the lung (493 per cent.), prostate (112), pancreas (98), kidney and suprarenals (74), intestine (43), gall bladder (42), testis (33), pharynx (29) and larynx (28), and for females, the lung (190), ovary and Fallopian tube (95), pancreas (79), gall bladder (47), kidney and suprarenals (42), and intestine (30). Those showing a decline are the tongue, mouth, jaw, liver, mesentery, skin and mediastinum in both sexes, pharynx, uterus, rectum and rodent ulcer in females, and lip, œsophagus and scrotum in males.

Standardized rates for all ages combined such as those shown in Table LXIII might fail to give any indication of a prolongation of

Table LXIII.—Cancer Mortality: Rates per Million Population (Standardized) for the more important Sites for each Sex 1901–10, 1911–20, 1921–30, 1930, 1931, 1932, 1933 and 1934.

			Males. Females.		Males. Females.		Males. Females.		Males. Females.		Males. Females.	
			All Sites.		Lip.		Tongue.		Mouth and Tonsil.		Jaw.	
1901–10	..	..	784	942	12.8	0.8	43.1	4.4	?	?	22.6	6.9
1911–20	..	..	897	959	12.6	0.7	50.8	4.3	23.5	3.0	25.1	7.2
1921–30	..	..	1,004	986	11.5	0.7	46.1	3.8	28.3	3.6	20.8	6.4
1930	..	..	1,031	987	11.3	0.7	40.6	3.5	29.3	3.8	16.7	5.3
1931	..	..	1,034	974	10.7	0.5	38.1	3.6	29.4	3.5	16.5	5.1
1932	..	..	1,052	966	10.3	0.6	37.6	3.4	21.2	2.4	16.6	5.2
1933	..	..	1,035	973	8.7	0.7	35.7	3.6	20.1	2.4	15.2	4.8
1934	..	..	1,046	974	10.5	0.8	37.4	3.7	19.5	2.2	14.4	5.3
			Pharynx.		Oesophagus.		Stomach.		Liver.		Gall-bladder.	
1901–10	..	..	?	?	51.2	14.6	167.2	133.0	?	?	?	?
1911–20	..	..	10.8	3.0	60.6	16.5	186.4	139.0	87.1	98.0	6.0	11.6
1921–30	..	..	12.6	3.0	64.2	18.1	221.1	155.5	61.0	60.9	8.8	16.6
1930	..	..	11.8	3.2	61.8	18.6	233.7	162.8	47.7	45.4	9.5	17.1
1931	..	..	13.0	3.1	62.8	18.7	231.3	155.5	47.0	42.7	9.2	16.9
1932	..	..	14.7	3.4	62.5	19.5	233.3	153.8	45.7	38.9	10.8	16.9
1933	..	..	12.8	3.4	57.8	18.3	229.2	156.7	45.5	36.8	9.6	16.5
1934	..	..	13.9	2.8	59.4	19.4	230.3	157.1	40.6	34.3	8.5	17.0
			Mesentery and Peritoneum.		Intestine.		Rectum and Anus.		Ovary and Fallopian Tube.		Uterus.	
1901–10	..	..	8.2	15.8	63.5	72.3	79.8	55.9	—	19.2	—	?
1911–20	..	..	6.0	12.0	96.8	109.2	93.6	59.3	—	24.3	—	174.4
1921–30	..	..	5.4	8.1	125.4	129.9	105.5	59.8	—	36.0	—	157.9
1930	..	..	4.9	6.6	136.9	138.4	110.6	59.9	—	42.3	—	143.9
1931	..	..	5.3	6.6	136.1	136.3	109.1	59.5	—	42.7	—	139.9
1932	..	..	4.6	6.3	136.8	133.9	113.5	59.8	—	43.3	—	137.8
1933	..	..	3.9	6.0	139.4	140.5	111.1	56.5	—	44.9	—	134.5
1934	..	..	4.2	5.5	138.9	141.5	111.3	59.0	—	47.5	—	135.8
			Breast.		Rodent Ulcer.		Penis.		Scrotum.		Other Skin.	
1901–10	..	..	1.5	158.4	?	?	?	—	?	—	?	?
1911–20	..	..	1.6	170.8	6.7	4.3	6.6	—	2.4	—	17.6	10.9
1921–30	..	..	1.8	189.1	8.4	4.9	6.4	—	2.7	—	17.6	10.2
1930	..	..	2.3	194.5	9.1	4.6	6.3	—	2.3	—	16.1	9.0
1931	..	..	2.3	200.2	9.0	4.7	6.5	—	2.6	—	17.5	9.2
1932	..	..	1.8	196.6	8.0	4.2	6.0	—	2.8	—	16.1	11.0
1933	..	..	2.0	197.9	7.2	3.9	5.7	—	2.3	—	15.6	9.9
1934	..	..	1.9	197.9	7.9	4.1	6.8	—	2.3	—	15.0	8.4
			Larynx.		Lung.		Pancreas.		Kidney and Suprarenals.		Bladder.	
1901–10	..	..	?	?	10.2	7.0	14.5	11.8	8.4	7.6	?	?
1911–20	..	..	23.9	6.0	12.7	7.0	16.7	13.1	9.1	7.2	28.2	9.7
1921–30	..	..	31.3	7.1	25.2	9.6	26.3	19.5	11.7	8.9	30.5	11.4
1930	..	..	31.6	8.5	40.2	13.9	29.4	23.8	13.0	8.7	31.8	11.5
1931	..	..	31.7	7.9	51.2	16.3	28.8	21.6	13.9	9.5	34.2	11.0
1932	..	..	30.7	7.2	57.0	17.2	32.0	23.1	13.7	10.1	32.0	11.2
1933	..	..	30.8	7.1	66.8	17.6	32.4	24.7	14.1	10.3	32.5	12.0
1934	..	..	30.7	7.3	75.3	20.3	33.0	23.5	15.8	10.2	33.6	10.5
			Prostate.		Testis.		Bones.		Mediastinum.			
1901–10	..	..	11.8	—	?	—	?	?	8.1	4.5		
1911–20	..	..	26.5	—	4.9	—	15.7	12.0	9.2	4.6		
1921–30	..	..	47.7	—	5.8	—	17.6	13.5	12.6	5.8		
1930	..	..	54.9	—	6.7	—	17.3	12.0	13.1	5.3		
1931	..	..	56.4	—	5.9	—	16.5	11.7	11.4	4.6		
1932	..	..	58.5	—	6.8	—	16.8	13.3	9.8	4.0		
1933	..	..	57.4	—	6.6	—	16.4	13.0	9.8	4.1		
1934	..	..	56.2	—	6.5	—	17.6	12.2	8.8	4.1		

life by improving resort to or results of treatment of cancer of certain sites over a period of time, unless permanent cures were being effected. For this reason Table LXIV has been prepared to compare the actual registered deaths in successive age groups during the two years 1933–34 from cancer of each site with the number which would have occurred if the estimated population at risk at each age during 1933–34 had been subjected to the mean mortality rate of the decade 1911–20 at that age. The actual deaths are then expressed as percentages of the calculated deaths, so that the excess or defect

from 100 denotes the percentage increase or decrease since 1911-20 in the risk of being certified as dying from cancer of the site in question at the specified age.

If improved application of treatment of cancer of certain sites during the last 18 years has resulted in an increased postponement of death from those particular forms of cancer, this should be reflected in a deficiency of deaths below the expected number at ages before 55 or 65, and an excess of deaths at later ages. Such an effect, if present, may be superimposed upon other changes such as a decreasing incidence of malignant change in the organ in question, increasing recognition of it when it occurs or more accurate certification of it after decease. Another factor affecting the figures is a transfer to the site of the primary growth of deaths which were previously attributed, owing to less accurate certification, to the site of a secondary growth. The combined effects of these transfers to higher age groups or to other sites may be deduced from Table LXIV, where the excess or defect of deaths up to age 55, at 55-65, up to and after 65, and at all ages, is given for each site.

The mean age at death in 1933-34, calculated from Table LXIV by the simple, but sufficiently accurate method of multiplying the registered deaths in successive columns by 2, 3, 4, 5, 6, 7, 8 and 9, and dividing the resulting figure by one-tenth of the deaths at all ages, is also given in Table LXV and the excess or defect from the mean age at death if the same population had been subject to 1911-20 rates of mortality at the several ages.

Cancer without distinction of site manifests an increase for males of 13 per cent. at ages under 25, 10 at 25-35, 5 at 35-45, a slight decrease at 45-55 and increases of 5, 25, 46 and 58 per cent. at subsequent age groups. For females an increase of 24 per cent. at 0-25 is followed by decreases of 2, 6, 8 and 5 per cent. in the four decennial age periods between 25 and 65, with increases after age 65 of 7, 25 and 47 per cent. (*See also* Diagram 3.) This is equivalent to an excess during 1933-34 of 841 deaths of males under 65 and 7,204 after 65, and to a deficiency of 2,235 deaths of females under 65 and an excess of 3,951 after 65. The mean ages at death, 64.1 and 63.2, have increased since 1911-20 by 1.3 and 1.2 years for males and females respectively after allowing for the effect of the changed age distribution of the population at risk.

Cancer of the *liver* registers a decline of 51 per cent. for males and 63 per cent. for females, evident at every age, and the *mesentery and peritoneum* show almost as great a fall. It is probable that the whole of the apparent change for these sites, namely the fall of 7,448 deaths below expectation, is attributable to more accurate description of the primary site, so that the bulk of this total should really be added to the expected deaths from cancer of the stomach, intestines, pancreas, gall bladder, rectum, female breast

and generative organs. The apparent excess for these organs is as follows :—

	Excess.	Male.	Female.	Total.
Stomach		2,393	1,456	3,849
Intestine		2,404	2,398	4,802
Pancreas, gall bladder		1,095	1,180	2,275
Rectum		1,020	—57	963
Female breast, uterus, ovary ..		—	862	862
Total of above		6,912	5,839	12,751

	Deficiency.		
Liver	2,529	4,350	} 7,448
Mesentery, peritoneum	119	450	

From the above figures it is evident that more than one-half of the apparent increase in deaths attributed to cancer of the digestive tract could be explained by more accurate description of cancer of the liver and peritoneum, and this must be borne in mind when considering the apparent changes for these sites. It is also evident from Diagram 3 that there has been no apparent change in the aggregate male mortality risk from cancer of the stomach, intestine, peritoneum, pancreas and liver at ages under 65, but from 65 onwards there has been an apparent increase reaching 90 per cent. at ages over 85.

Sites other than the liver and peritoneum can be classified from Table LXV into 5 groups according to the kind of apparent change in mortality since 1911–20. It will be noticed that the first group consists entirely, and the second mainly, of “accessible” sites, whilst the last group, registering apparent increase alike in early and late life, consists mainly of the “inaccessible” sites.

(1) Sites showing less deaths than expected before and after 65.	{	Lip (males).
		Jaw.
		Mouth and tonsil (females).
		Skin cancers other than rodent ulcer, penis and scrotum.
		Uterus.
(2) Sites showing less deaths than expected before 65 but an excess after 65.	{	Tongue.
		Mouth and tonsil (males).
		Pharynx.
		Œsophagus (males).
		Stomach (females).
		Rectum (females).
		Mediastinum.
		Bladder (females).
	{	Penis and scrotum.
		Rodent ulcer.

- (3) No appreciable change.. Lip (females).
- (4) Sites showing more deaths
than expected before 65
but less after 65. } Testis.
Bones (males).
- (5) Sites showing excess of
deaths over expectation
before and after 65. } Oesophagus (females).
Stomach (males).
Intestine.
Rectum (males).
Pancreas.
Gall bladder.
Kidney.
Breast.
Larynx.
Lung.
Ovary and Fallopian tube.
Bladder (males).
Prostate.
Bones (females).

The indications given by Tables LXIII to LXV as to the mortality changes since 1911-20 for these sites will now be considered in turn.

Lip.—The standardized rate for males fell from 12·6 per million in 1911-20 to 8·7 in 1933, but increased to 10·5 in 1934. The rate for females ranges between 0·5 and 0·8 per million. Each age group of persons over 35 shows a fall, and the mean age at death, 70·7 years, is not appreciably different from its expected value.

Jaw.—Male standardized mortality has fallen from 25·1 per million in 1911-20 to 14·4 in 1934, and the female rate from 7·2 to 5·3. The decline has been greatest at 45-55 and then progressively slighter at more advanced years, the mean age at death having increased by 2 years more than can be accounted for by population changes.

A declining incidence of cancer of these two sites must be the main cause of these changes, assisted perhaps by increased resort to treatment for lip cancers.

Skin.—Cancer of the skin, other than rodent ulcer, but including malignant growths of the penis or scrotum, registers a decline in the male standardized rate from 17·6 in 1911-20 to 15·0 in 1934, and in the female rate from 10·9 to 8·4. The improvement is evident at each age between 25 and 85 for males and at each age under 85 for females, and the mean age at death has advanced about a year in excess of expectation for males. Lower incidence of skin cancer or more effective treatment of it, or both, probably account for the reduction in mortality at almost every age.

Uterus.—The rapid decline in mortality from uterine cancer from 174·4 in 1911-20 to 156·4 in 1926, and then continuing in

every year to 134·5 in 1933, was interrupted by a slight increase in 1934. Combining 1933-34, the fall amounts to 24 per cent. at 25-35, 26 at 35-65, 14 at 65-75 and 6 per cent. at 75 and up, and the mean age at death, 58·5 years, has advanced by about one year in excess of expectation. The change is depicted in Diagram 3. Analysis of 1930-32 mortality by marital condition (Review for 1932, p. 72) showed that whilst at ages under 45 mortality had declined from 1911-20 to 1930-32 to a greater degree amongst the married than the single, between 45 and 75 the relative improvement was almost the same in each group of women (about 25 per cent. fall at ages 45-65 and 13 per cent. at 65-75).

Table LXIV.—Deaths from Cancer of Various Sites at different Ages in 1933-34 compared with the numbers expected had the mean rates during 1911-20 been operative; also actual deaths as percentages of the expected deaths.

				0-	25-	35-	45-	55-	65-	75-	85 and Up.	All Ages. *
Lip..	{	Both sexes.	Expected deaths ..	—	1	10	57	162	256	223	53	762
			Registered deaths ..	1	3	6	34	114	218	175	41	592
			Ratio per cent. ..	—	—	—	60	70	85	78	77	78
Tongue ..	{	Males.	Expected deaths ..	1	8	103	591	1,082	846	261	16	2,908
			Registered deaths ..	—	3	19	194	733	866	299	25	2,139
			Ratio per cent. ..	—	—	18	33	68	102	115	156	74
	{	Females.	Expected deaths ..	1	7	23	49	76	79	44	9	288
			Registered deaths ..	—	—	17	30	74	76	51	8	256
			Ratio per cent. ..	—	—	74	61	97	96	116	—	89
Mouth and Tonsil.	{	Both sexes.	Expected deaths ..	13	14	62	284	544	431	168	19	1,536
			Registered deaths ..	4	15	27	117	443	469	206	23	1,304
			Ratio per cent. ..	—	—	44	41	81	109	123	121	85
Jaw ..	{	Both sexes.	Expected deaths ..	28	29	88	329	614	561	212	25	1,886
			Registered deaths ..	22	23	47	139	313	405	186	26	1,161
			Ratio per cent. ..	79	79	53	42	51	72	88	104	62
Pharynx ..	{	Both sexes.	Expected deaths ..	12	12	49	189	333	245	74	8	922
			Registered deaths ..	11	10	28	129	329	347	108	10	972
			Ratio per cent. ..	—	—	57	68	99	142	146	—	105
Œsophagus.	{	Males.	Expected deaths ..	1	9	94	653	1,347	1,061	311	18	3,494
			Registered deaths ..	1	6	38	315	1,236	1,318	480	34	3,428
			Ratio per cent. ..	—	—	40	48	92	124	154	189	98
	{	Females.	Expected deaths ..	1	20	114	233	299	268	139	20	1,094
			Registered deaths ..	—	7	65	223	400	374	211	30	1,310
			Ratio per cent. ..	—	35	57	96	134	140	152	150	120
Stomach ..	{	Males.	Expected deaths ..	9	118	502	1,691	3,577	3,542	1,120	66	10,625
			Registered deaths ..	10	165	605	2,034	3,921	4,430	1,737	116	13,018
			Ratio per cent. ..	—	140	121	120	110	125	155	176	122
	{	Females.	Expected deaths ..	8	100	458	1,399	2,832	3,257	1,462	158	9,674
			Registered deaths ..	10	110	413	1,287	2,801	4,011	2,207	291	11,130
			Ratio per cent. ..	—	110	90	92	99	123	151	184	115
Liver ..	{	Males.	Expected deaths ..	23	47	176	686	1,604	1,730	660	45	4,971
			Registered deaths ..	10	24	83	249	664	936	432	44	2,442
			Ratio per cent. ..	43	51	47	36	41	54	65	98	49
	{	Females.	Expected deaths ..	19	47	240	890	2,048	2,400	1,125	120	6,889
			Registered deaths ..	17	12	84	248	585	930	572	91	2,539
			Ratio per cent. ..	89	26	35	28	29	39	51	76	37

* Summation of expected and registered deaths in the previous columns. The ratio is equivalent to the ratio between standardized death-rates in 1933-34 and 1911-20 based upon the mean population of 1933-34 as standard.

Table LXIV.—*cont.*

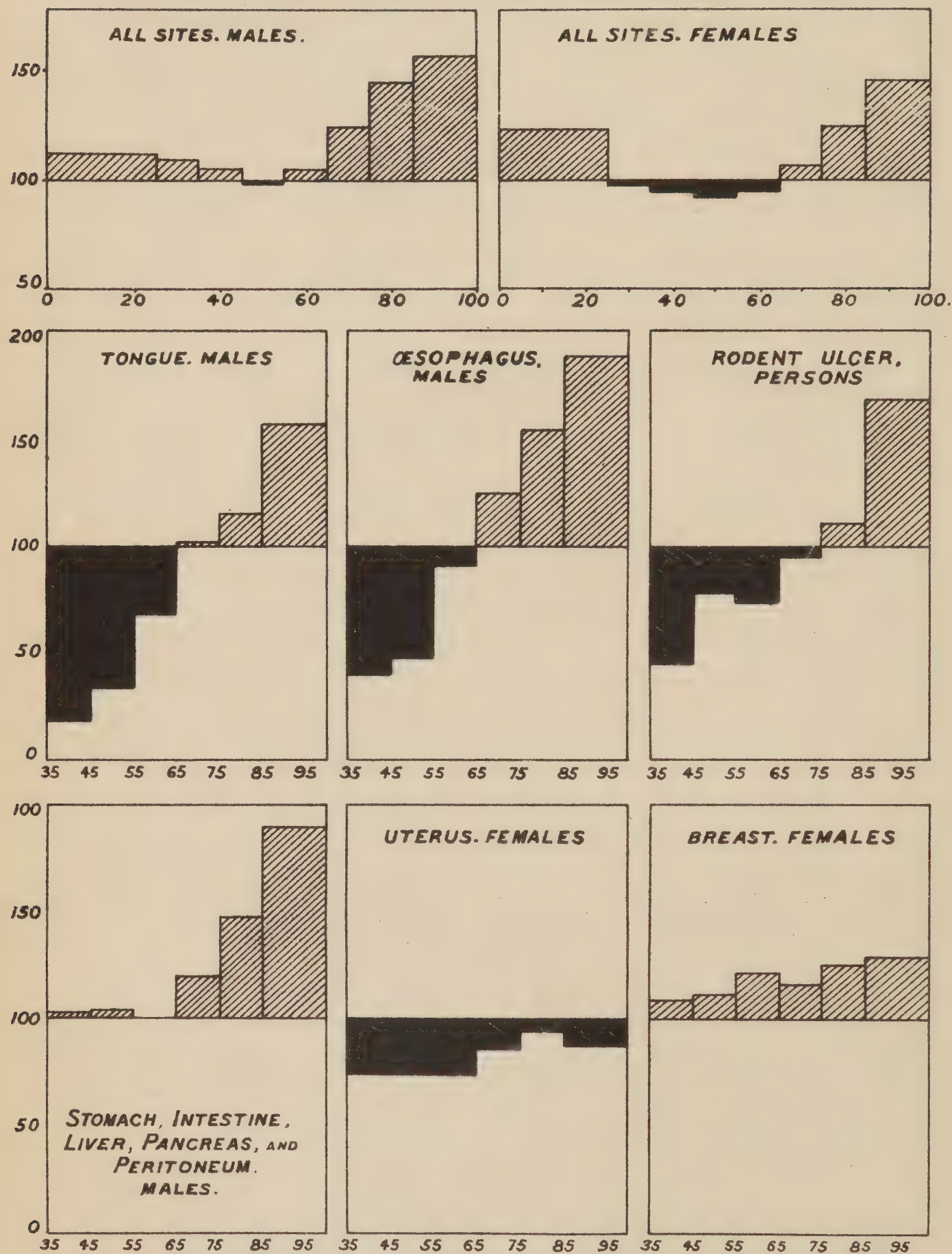
			0-	25-	35-	45-	55-	65-	75-	85-	All Ages.
Gall bladder	Males.	Expected deaths ..	—	2	9	46	98	125	56	4	340
		Registered deaths	—	1	9	60	144	194	94	15	517
		Ratio per cent. ..	—	—	—	130	147	155	168	—	152
	Females.	Expected deaths ..	—	4	20	107	251	294	133	16	825
		Registered deaths	1	5	26	133	303	440	255	40	1,203
		Ratio per cent. ..	—	—	130	124	121	150	192	250	146
Mesentery and Peritoneum.	Males.	Expected deaths ..	12	18	27	55	97	86	23	2	320
		Registered deaths	22	14	15	41	56	41	11	1	201
		Ratio per cent. ..	—	78	56	75	58	48	48	—	63
	Females.	Expected deaths ..	9	17	59	153	243	213	98	12	804
		Registered deaths	20	10	42	61	102	89	28	2	354
		Ratio per cent. ..	—	59	71	40	42	42	29	—	44
Intestine ..	Males.	Expected deaths ..	23	71	237	709	1,658	1,947	787	58	5,490
		Registered deaths	23	88	240	782	2,047	3,031	1,536	147	7,894
		Ratio per cent. ..	100	124	101	110	123	156	195	253	144
	Females.	Expected deaths ..	16	95	320	1,009	2,063	2,598	1,377	176	7,654
		Registered deaths	21	116	392	1,048	2,234	3,469	2,357	415	10,052
		Ratio per cent. ..	131	122	123	104	108	134	171	236	131
Rectum and anus.	Males.	Expected deaths ..	17	70	197	676	1,698	1,883	735	57	5,333
		Registered deaths	18	68	193	640	1,864	2,415	1,078	77	6,353
		Ratio per cent. ..	106	97	98	95	110	128	147	135	119
	Females.	Expected deaths ..	12	73	223	613	1,120	1,319	639	87	4,086
		Registered deaths	12	85	195	470	1,043	1,336	766	122	4,029
		Ratio per cent. ..	—	116	87	77	93	101	120	140	99
Pancreas ..	Males.	Expected deaths ..	4	20	54	169	333	266	84	4	935
		Registered deaths	3	19	72	312	549	625	249	24	1,853
		Ratio per cent. ..	—	95	133	185	165	235	293	—	198
	Females.	Expected deaths ..	3	11	45	144	290	279	112	11	895
		Registered deaths	7	11	66	207	508	560	289	49	1,697
		Ratio per cent. ..	—	—	147	144	175	201	258	—	190
Breast ..	Males.	Expected deaths ..	—	—	4	15	23	26	17	2	87
		Registered deaths	—	1	7	15	32	37	14	2	108
		Ratio per cent. ..	—	—	—	100	139	142	82	—	124
	Females.	Expected deaths ..	3	157	1,125	2,706	3,087	2,526	1,430	304	11,338
		Registered deaths	5	170	1,220	3,008	3,722	2,942	1,782	389	13,238
		Ratio per cent. ..	—	108	108	111	121	116	125	128	117
Rodent ulcer	Males.	Expected deaths ..	1	3	7	19	67	113	123	34	367
		Registered deaths	—	4	4	19	51	129	145	56	408
		Ratio per cent. ..	—	—	—	100	76	114	118	165	111
	Females.	Expected deaths ..	1	1	4	19	46	91	122	44	328
		Registered deaths	—	—	1	11	33	66	128	75	314
		Ratio per cent. ..	—	—	—	58	72	73	105	170	96
Penis, Scrotum.	Males.	Expected deaths ..	—	8	26	74	163	142	79	12	504
		Registered deaths	—	1	17	54	121	164	106	19	482
		Ratio per cent. ..	—	—	65	73	74	115	134	158	96
Other skin	Males.	Expected deaths ..	8	13	36	100	209	281	260	58	965
		Registered deaths	10	8	22	67	170	275	221	64	837
		Ratio per cent. ..	—	—	61	67	81	98	85	110	87
	Females.	Expected deaths ..	8	12	28	70	149	220	224	60	771
		Registered deaths	8	14	27	68	116	159	186	68	646
		Ratio per cent. ..	—	—	96	97	78	72	83	113	84
Larynx ..	Males.	Expected deaths ..	2	6	49	283	525	396	106	5	1,372
		Registered deaths	—	2	36	243	676	597	212	18	1,784
		Ratio per cent. ..	—	—	73	86	129	151	200	—	130
	Females.	Expected deaths ..	1	16	50	107	106	62	29	2	373
		Registered deaths	—	5	43	120	137	110	56	8	479
		Ratio per cent. ..	—	31	86	112	129	177	193	—	128

Table LXIV.—*cont.*

			0—	25—	35—	45—	55—	65—	75—	85—	All Ages.
Lung (or pleura)	Males.	Expected deaths ..	20	36	66	151	227	148	27	1	676
		Registered deaths	33	93	380	1,104	1,365	712	178	8	3,873
		Ratio per cent. ..	165	258	576	731	601	481	659	—	573
	Females.	Expected deaths ..	13	14	47	102	136	100	27	2	441
		Registered deaths	13	39	108	252	389	317	111	6	1,235
		Ratio per cent. ..	—	—	230	247	286	317	411	—	280
Kidney and suprarenal.	Males.	Expected deaths ..	56	14	34	92	138	96	29	2	461
		Registered deaths	83	21	65	141	250	145	52	2	759
		Ratio per cent. ..	148	—	191	153	181	151	179	—	165
	Females.	Expected deaths ..	48	12	31	70	119	95	40	4	419
		Registered deaths	65	16	47	94	161	152	67	7	609
		Ratio per cent. ..	135	—	152	134	135	160	168	—	145
Bladder ..	Males.	Expected deaths ..	6	9	45	170	475	631	253	25	1,614
		Registered deaths	1	4	49	229	528	707	338	34	1,890
		Ratio per cent. ..	—	—	109	135	111	112	134	136	117
	Females.	Expected deaths ..	2	4	23	82	186	237	132	19	685
		Registered deaths	3	7	27	83	175	293	182	36	806
		Ratio per cent. ..	—	—	117	101	94	124	138	189	118
Prostate ..	Males.	Expected deaths ..	4	3	8	77	382	697	343	24	1,538
		Registered deaths	4	3	11	114	650	1,528	884	74	3,268
		Ratio per cent. ..	—	—	—	148	170	219	258	308	212
Testis ..	Males.	Expected deaths ..	19	48	42	36	32	32	19	2	230
		Registered deaths	27	66	66	48	40	33	14	3	297
		Ratio per cent. ..	142	137	157	133	125	103	74	—	129
Uterus ..	Females.	Expected deaths ..	11	253	1,355	3,081	3,412	2,236	789	79	11,216
		Registered deaths	14	192	1,005	2,284	2,518	1,930	752	69	8,764
		Ratio per cent. ..	—	76	74	74	74	86	95	87	78
Ovary and Fallopian Tubes.	Females.	Expected deaths ..	27	68	194	429	443	253	80	5	1,499
		Registered deaths	47	100	342	787	844	579	192	22	2,913
		Ratio per cent. ..	174	147	176	183	191	229	240	—	194
Bones ..	Males.	Expected deaths ..	103	53	64	121	201	167	61	4	774
		Registered deaths	118	55	58	149	229	160	56	6	831
		Ratio per cent. ..	115	104	91	123	114	96	92	—	107
	Females.	Expected deaths ..	80	38	52	120	170	148	79	11	698
		Registered deaths	91	41	72	120	149	164	65	11	713
		Ratio per cent. ..	114	108	138	100	88	111	82	—	102
Mediastinum	Males.	Expected deaths ..	14	21	50	102	171	110	23	1	492
		Registered deaths	11	13	46	109	159	131	35	2	506
		Ratio per cent. ..	—	62	92	107	93	119	152	—	103
	Females.	Expected deaths ..	7	9	29	63	90	67	22	2	289
		Registered deaths	9	6	22	42	81	67	35	1	263
		Ratio per cent. ..	—	—	76	67	90	100	159	—	91
All other Sites.	Males.	Expected deaths ..	138	108	195	534	909	724	252	22	2,882
		Registered deaths	159	98	163	389	680	663	272	19	2,443
		Ratio per cent. ..	115	91	84	73	75	92	108	86	85
	Females.	Expected deaths ..	97	93	243	544	865	913	499	83	3,337
		Registered deaths	125	80	186	464	701	823	476	70	2,925
		Ratio per cent. ..	129	86	77	85	81	90	95	84	88
All sites ..	Males.	Expected deaths ..	490	717	2,166	7,741	16,417	16,322	6,171	545	50,569
		Registered deaths	555	787	2,272	7,601	17,157	20,377	9,002	863	58,614
		Ratio per cent. ..	113	110	105	98	105	125	146	158	116
	Females.	Expected deaths ..	390	1,072	4,741	12,160	18,286	17,873	8,737	1,246	64,505
		Registered deaths	484	1,047	4,434	11,166	17,283	19,086	10,884	1,837	66,221
		Ratio per cent. ..	124	98	94	92	95	107	125	147	103

Tongue.—Standardized male mortality from this cause reached 50·8 in 1911–20, but has fallen since to 35·7 in 1933, with a slight increase to 37·4 in 1934. This change in the rate at all ages gives

Diagram.3. MORTALITY RISK FROM CANCER IN 1933-34 EXPRESSED AS PERCENTAGE OF THAT IN 1911-20 AT THE SAME AGES.



an inadequate impression of what has been occurring, as Diagram 3 shows. On passing up the scale of age a decrease in mortality risk by 82 per cent. at 35-45 gives place by progressive stages to an increase by 56 per cent. at ages over 85, reflected also in an addition of 4 years to the mean age at death in excess of that caused by increasing average age of the population. Superimposed on a declining incidence of lingual cancer in males, there has probably been for this site an increased average delay of the fatal issue by earlier or more frequent resort to treatment. (See Diagram 3.) The female rate remains about one-tenth of that for males.

Table LXV.—Deaths from Cancer of Various Sites in 1933-34 in Excess or Defect of the Numbers expected had the mean rates during 1911-20 been operative. Mean age at death.

Site.	Sex	Excess or defect of Registered deaths in 1933-34 above or below number calculated by 1911-20 death-rates.					Mean age at death	
		Up to 55	55-65	Up to 65	After 65	All ages.	Actual 1933-34.	Excess or defect from expected.
All Sites	M.	+ 101	+ 740	+ 841	+ 7,204	+ 8,045	64.1	+ 1.3
	F.	- 1,232	- 1,003	- 2,235	+ 3,951	+ 1,716	63.2	+ 1.2
Lip	M.	- 20	- 53	- 73	- 96	- 169	70.7	+ 0.4
	F.	- 4	+ 5	+ 1	- 2	- 1		
Tongue	M.	- 487	- 349	- 836	+ 67	- 769	66.1	+ 4.0
	F.	- 33	- 2	- 35	+ 3	- 32	65.4	+ 2.8
Mouth, tonsil	M.	- 192	- 93	- 285	+ 99	- 186	65.5	+ 3.4
	F.	- 18	- 9	- 27	- 19	- 46		
Jaw.. .. .	M.	- 191	- 257	- 448	- 141	- 589	64.0	+ 2.1
	F.	- 52	- 44	- 96	- 40	- 136		
Pharynx	M.	- 70	- 7	- 77	+ 110	+ 33	63.4	+ 2.9
	F.	- 14	+ 3	- 11	+ 28	+ 17		
Œsophagus	M.	- 397	- 111	- 508	+ 442	- 66	65.7	+ 3.3
	F.	- 73	+ 101	+ 28	+ 188	+ 216	63.9	+ 3.2
Stomach	M.	+ 494	+ 344	+ 838	+ 1,555	+ 2,393	63.4	+ 0.7
	F.	- 145	- 31	- 176	+ 1,632	+ 1,456	66.1	+ 2.0
Liver	M.	- 566	- 940	- 1,506	- 1,023	- 2,529	65.7	+ 1.9
	F.	- 835	- 1,463	- 2,298	- 2,052	- 4,350	67.2	+ 2.2
Gall-bladder	M.	+ 13	+ 46	+ 59	+ 118	+ 177	66.7	+ 1.4
	F.	+ 34	+ 52	+ 86	+ 292	+ 378	67.2	+ 1.8
Mesentery, peritoneum	M.	- 20	- 41	- 61	- 58	- 119	53.3	- 4.4
	F.	- 105	- 141	- 246	- 204	- 450	57.1	- 4.0
Intestine	M.	+ 93	+ 389	+ 482	+ 1,922	+ 2,404	66.2	+ 2.2
	F.	+ 137	+ 171	+ 308	+ 2,090	+ 2,398	67.1	+ 2.1
Rectum and anus.. .. .	M.	- 41	+ 166	+ 125	+ 895	+ 1,020	65.5	+ 1.4
	F.	- 159	- 77	- 236	+ 179	- 57	65.1	+ 1.4
Pancreas	M.	+ 159	+ 216	+ 375	+ 543	+ 918	63.6	+ 2.6
	F.	+ 88	+ 218	+ 306	+ 496	+ 802	65.2	+ 2.3
Breast	M.	+ 4	+ 9	+ 13	+ 8	+ 21	63.6	- 1.3
	F.	+ 412	+ 635	+ 1,047	+ 853	+ 1,900	61.3	+ 0.5
Rodent ulcer	M.	- 3	- 16	- 19	+ 60	+ 41	73.4	+ 2.1
	F.	- 13	- 13	- 26	+ 12	- 14	77.0	+ 3.8
Penis, scrotum	M.	- 36	- 42	- 78	+ 56	- 22	67.1	+ 3.4
	M.	- 50	- 39	- 89	- 39	- 128	68.8	+ 1.2
Skin, other than above	F.	- 1	- 33	- 34	- 91	- 125	68.3	- 0.1
Larynx	M.	- 59	+ 151	+ 92	+ 320	+ 412	64.2	+ 2.6
	F.	- 6	+ 31	+ 25	+ 81	+ 106	60.5	+ 4.1
Lung (or pleura)	M.	+ 1,337	+ 1,138	+ 2,475	+ 722	+ 3,197	57.0	+ 0.9
	F.	+ 236	+ 253	+ 489	+ 305	+ 794	59.3	+ 2.3
Kidney, Suprarenal	M.	+ 114	+ 112	+ 226	+ 72	+ 298	54.6	+ 0.3
	F.	+ 61	+ 42	+ 103	+ 87	+ 190	56.9	+ 1.0
Bladder	M.	+ 53	+ 53	+ 106	+ 170	+ 276	66.0	+ 0.5
	F.	+ 9	- 11	- 2	+ 123	+ 121	67.4	+ 1.4
Prostate	M.	+ 40	+ 268	+ 308	+ 1,422	+ 1,730	70.3	+ 1.6
Testis	M.	+ 62	+ 8	+ 70	- 3	+ 67	46.0	- 2.5
Uterus	F.	- 1,205	- 894	- 2,099	- 353	- 2,452	58.5	+ 0.8
Ovary and Fallopian tube	F.	+ 558	+ 401	+ 959	+ 455	+ 1,414	56.8	+ 1.5
Bones	M.	+ 39	+ 28	+ 67	+ 10	+ 57	52.6	- 0.6
	F.	+ 34	+ 21	+ 13	+ 2	+ 15	54.0	- 1.4
Mediastinum	M.	- 8	- 12	- 20	+ 34	+ 14	58.5	+ 1.8
	F.	- 29	- 9	- 38	+ 12	- 26	60.0	+ 2.0

Mouth, tonsil and pharynx.—Standardized mortality for cancer of the mouth and tonsil, which was increasing up to 1930–31, has recently declined, but the male rate for the pharynx has increased since 1911–20 by 3·1, against a fall of 4·0 for mouth and tonsil. For both sites mortality has decreased remarkably at ages under 55 but has increased at ages over 65, and the mean age at death has advanced by 3 to 3½ years in excess of expectation. Later incidence of cancer of these sites must surely be indicated by these changes.

Œsophagus.—No important change has occurred in the male standardized rate since 1911–20, whilst the female rate has increased by 18 per cent., but there has been a remarkable change in the age distribution of the deaths of both sexes. The male deaths at ages under 65 in 1933–34 numbered 508 less, and deaths at ages 65 and over numbered 442 more than if the rates had remained constant at each age, whilst deaths of females were 73 in defect at ages under 55 and 289 in excess at ages over 55. (See Diagram 3.) This change, with its resultant advancement of the mean age at death by over 3 years in excess of expectation, probably reflects a postponement of the incidence of cancer of this site to later ages, rather than to prolongation of life after incidence.

Stomach.—Standardized mortality increased for males from 186 in 1911–20 to 237 in 1929 and has remained since between 229 and 234. The female rate, only two-thirds of that for males, has followed a similar course, but whilst the apparent male risks have increased at every age, the risk to females has fallen between ages 35 and 65. The whole of the increase is explicable by transfer from cancer of the liver and by improved diagnosis and certification in other directions.

Rectum and Anus.—Standardized mortality of males rose from 94 in 1911–20 to 113 in 1932 and 111 in 1933–34, but the female rate has remained remarkably constant, about 59. At ages 25–55 for males and 35–65 for females a slight fall has occurred, exceeded in the one case and balanced in the other by increases at advanced ages, these increases being no doubt apparent rather than real.

Bladder.—Cancer of this organ registers an increase since 1911–20 for each sex at every age over 35, except at 55–65 for females, but the standardized rates have shown no tendency to increase in recent years.

Penis and Scrotum.—The standardized rate was 9·1 in 1934 compared with 8·0 in 1933 and 9·0 in 1911–20. A decrease of deaths before age 65 has been balanced by an increase at later ages, with an addition of 3·4 years to the mean age at death, in excess of expectation. Postponed incidence of this form of cancer, due perhaps to precautionary measures, or delayed death by more effective treatment, or both combined, are no doubt responsible for this.

Rodent ulcer mortality increased up to 1928-29, but of recent years has tended to decline. A transfer of deaths to more advanced ages is again noticeable (see Diagram 3), particularly for females whose mean age at death has increased by nearly 4 years more than can be accounted for by changes in the population, a result probably attributable to improved treatment, preventive and curative.

Testis.—The mean age at death, 46 years, is lower than for any other site, the next sites in order for males being the bones, peritoneum and kidney. Standardized mortality was 4·9 per million in 1911-20 and 6·5 in 1934, a considerable increase having occurred at each age up to 65.

Bones.—For this group mortality changes have been small, a slight increase having been registered since 1911-20 at ages under 65 for males and under 55 for females.

Intestine.—The standardized rate for males rose from 97 in 1911-20 to 139 in 1933-34, and for females from 109 to 141. At ages below 65 the apparent increase amounts to 18 per cent. for males and 9 per cent. for females, but becomes greater at higher ages. Transfer from cancer of the liver, and increasing precision of certification are no doubt the main factors concerned.

Pancreas, gall bladder.—Deaths attributed to cancer of these sites increased rapidly to the middle of 1921-30, but have mounted more slowly since. The percentage increase has been greater at advanced than at earlier ages.

Kidney and Suprarenal.—Standardized mortality of males rose from 9·1 in 1911-20 to 15·8 in 1934, and the female rate from 7·2 to 10·2 per million. This apparent increase has occurred at every age.

Breast.—The increase in female mortality from breast cancer amounted to 8 per cent. from 1901-10 to 1911-20, and 11 per cent. in the next decennium, with a further 5 per cent. rise to 1934, but there has not been any consistent change since 1928. Many cases of breast cancer followed after removal by secondary cancer of the liver were formerly certified under the latter description and the transfer of such deaths with improved certification doubtless accounts for part of the rise in the breast rate. Probably there has been an increasing incidence of breast cancer coincident with declining fertility. The increase from 1911-20 to 1933-34 has been 10 per cent. at ages under 55, and 20 at 55 and upwards (see Diag. 3). In so far as treatment only delays the fatal issue in many cases, a more extensive resort to such treatment must tend to increase the rates at later ages at the expense of those at earlier ages. It was shown in the Review for 1932 (Table LII and p. 72) that whilst mortality at ages 35-55 had increased from 1911-20 to 1930-32 by about 10 per cent. in married and single alike, at ages over 55 the increase had been much greater amongst the married than the single.

Larynx.—The rise in the standardized rate until 1921-30 has not been sustained in recent years. Since 1911-20 there has been

a decline at ages under 55 for males, and under 45 for females, but at higher ages increases have occurred which become rapidly greater in extent with advancing age. It is difficult to account for this except by postponement of onset of this form of cancer by lessened intensity of some of the causes, whatever they may be, as in the case of the oesophagus.

Lung.—Mortality attributed to cancer of the lung continues to mount rapidly year by year. The male rate was 12·7 in 1911–20, 25·2 in 1921–30 and 75·3 in 1934, and the corresponding female rates 7·0, 9·6 and 20·3 per million. The increase to 1933–34 at ages under 35 amounts to 125 per cent. for males and 93 per cent. for females, but at the higher age groups it ranges from 130 to 311 per cent. for females. Whilst the magnitude of the increase in both sexes suggests that improved means of diagnosis is partly responsible, the greater relative increase for males than for females requires some other explanation.

Ovary and Fallopian tube.—Mortality attributed to cancer of these sites continues to increase and has almost doubled since 1911–20, this increase being evident at every age though relatively greater at ages over 65.

Prostate.—Standardized mortality increased from 26·5 in 1911–20 to 58·5 in 1932, and has fallen since to 56·2 in 1934. The proportionate amount of increase to 1933–34 is 48 per cent. at 45–55, 70 at 55–65, 119 at 65–75, 158 at 75–85 and 208 per cent. at ages 85 and over, the mean age at death being 70·3 years.

54. Tumours not returned as malignant.—As in other recent years all deaths from tumours not definitely stated to be malignant have been assembled in Table LXVI. These numbered 3,236, the tumour being returned as benign in 1,905 instances, and its nature in the remaining 1,331 being unstated. The classification differs from that in use prior to 1931, as explained in the Review for 1931.

“Adenoma” of the prostate is classed to diseases of the prostate, No. 137, rather than to these headings because this condition seems to be scarcely distinguishable from that described as prostatic hypertrophy. Benign tumours other than adenoma or the varieties of it shown in Table LXVI are classed to No. 54 (2 only in 1934) and tumours of unstated nature to No. 55. Mortality attributed to prostatic diseases is seen from Table 8 to have increased rapidly in the last decade, the standardized rate being 114 per million in 1924 and 160 in 1934. In 1934 a total of 6,208 deaths was assigned to No. 137, diseases of the prostate, No. 51, cancer of the prostate, and Nos. 54, 55, other or ill defined tumours, and of these deaths 26·4 per cent. were attributed to cancer, 5·7 per cent. to benign tumours and 67·9 per cent. to other conditions, chiefly hypertrophy.

Deaths attributed to non-malignant conditions have increased in recent years rather more rapidly than those attributed to cancer. The proportions calculated on the above basis for 1922–24 were 29·1, 4·4 and 66·5 per cent. respectively.

Table LXVI.—England and Wales, 1934 ; Deaths attributed to Tumours not returned as malignant.

Part affected.		All Ages.		0—		15—		35—		45—		55—		65—		75 & Up.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
<i>Tumours classed with other disease of organ affected.</i>																	
In 137. Prostate		352	—	—	—	—	—	—	—	2	—	49	—	145	—	156	—
Adenoma		331	—	—	—	—	—	—	—	1	—	45	—	136	—	149	—
Fibroadenoma		7	—	—	—	—	—	—	—	1	—	2	—	3	—	1	—
Fibroid		3	—	—	—	—	—	—	—	—	—	2	—	—	—	1	—
Fibromyoma		1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Myoadenoma		10	—	—	—	—	—	—	—	—	—	—	—	6	—	4	—
<i>Tumours not classed with other disease of organ affected.</i>																	
54a and 55a. Female genital organs.																	
Ovary	Cyst.. .. .	—	259	—	1	—	20	—	36	—	48	—	39	—	58	—	57
	Cystadenoma	—	5	—	1	—	—	—	1	—	2	—	—	—	1	—	—
	Endometrioma	—	5	—	—	—	1	—	4	—	—	—	—	—	—	—	—
	Fibroid	—	11	—	—	—	—	—	3	—	3	—	2	—	2	—	1
	Other benign	—	2	—	—	—	—	—	1	—	—	—	1	—	—	—	—
	Nature unstated	—	7	—	—	—	—	—	1	—	2	—	1	—	1	—	2
Uterus	Fibroid	—	388	—	—	—	28	—	99	—	152	—	46	—	30	—	33
	Endometrioma	—	3	—	—	—	1	—	1	—	1	—	—	—	—	—	—
	Myoma	—	12	—	—	—	1	—	4	—	2	—	—	—	4	—	1
	Polypus	—	6	—	—	—	1	—	2	—	1	—	2	—	—	—	—
	Other benign	—	8	—	—	—	—	—	2	—	5	—	1	—	—	—	—
	Nature unstated	—	5	—	—	—	1	—	—	—	1	—	—	—	2	—	1
Pelvis	Non-malignant	—	4	—	—	—	—	—	2	—	—	—	2	—	—	—	—
	Nature unstated	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Vagina	Non-malignant	—	2	—	—	—	—	—	—	—	1	—	—	—	1	—	—
Broad ligament..	Cyst.. .. .	—	3	—	—	—	2	—	—	—	—	—	—	—	1	—	—
	Other benign	—	5	—	—	—	1	—	2	—	2	—	—	—	—	—	—
54b and 55b. Other sites.																	
Brain	Angioma	1	3	—	2	—	1	—	—	1	—	—	—	—	—	—	—
	Astrocytoma	11	6	2	3	3	1	3	—	1	1	1	1	1	—	—	—
	Cyst.. .. .	25	15	5	1	8	5	3	4	2	2	6	1	1	2	—	—
	Endothelioma, non-malignant	1	3	—	—	—	—	—	1	1	2	—	—	—	—	—	—
	Glioma	163	129	15	26	40	24	29	20	42	36	34	15	3	7	—	1
	Hæmangioma	2	3	—	—	—	1	1	1	1	1	—	—	—	—	—	—
	Meningioma, non-malignant	3	6	—	—	1	1	1	—	—	2	1	3	—	—	—	—
	Other benign	11	19	1	1	3	3	1	3	2	2	3	6	1	3	—	1
	Nature unstated	439	446	44	42	74	62	67	71	106	111	100	103	40	48	8	9
Pituitary gland..	Adenoma	13	9	1	—	5	3	2	1	2	3	2	1	1	1	—	—
	Cyst	—	3	—	1	—	1	—	—	—	1	—	—	—	—	—	—
	Other benign	1	3	1	—	—	1	—	1	—	—	—	—	—	1	—	—
	Nature unstated	17	8	1	1	3	3	3	1	5	—	3	2	2	1	—	—
Pineal body	Non-malignant	2	1	1	—	—	—	—	—	1	1	—	—	—	—	—	—
Thyroid	Cyst.. .. .	3	3	—	1	—	—	—	—	—	—	1	—	2	1	—	1
	Other benign	1	1	—	—	—	—	1	—	—	—	—	1	—	—	—	—
Spinal cord	Angioma	3	—	—	—	—	—	—	—	1	—	1	—	1	—	—	—
	Glioma	6	3	—	1	—	1	2	—	—	—	2	—	2	1	—	—
	Other benign	3	2	—	—	1	—	—	—	1	2	—	—	1	—	—	—
	Nature unstated	4	7	—	1	—	—	—	—	1	—	1	5	1	1	1	—
Eye	Glioma	1	2	1	2	—	—	—	—	—	—	—	—	—	—	—	—
	Other benign	1	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—
	Nature unstated	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Ear	Polypus	3	1	—	—	2	1	—	—	1	—	—	—	—	—	—	—
	Other benign	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Nose	Polypus	5	7	—	—	—	3	1	1	1	1	2	—	—	—	1	2
	Other benign	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Larynx	Papilloma	2	2	—	—	—	—	—	—	2	—	—	2	—	—	—	—
	Other benign	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
	Nature unstated	3	3	—	—	—	—	—	—	1	1	2	1	—	—	—	1
Pharynx	Non-malignant	1	3	1	—	—	—	—	—	—	—	—	—	—	2	—	1
Mediastinum	Non-malignant	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
	Nature unstated	80	32	2	—	4	2	1	1	26	5	29	5	11	12	7	7

Table LXVI.—continued.

Part affected.	All Ages.		0-		15-		35-		45-		55-		65-		75 & Up.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
<i>Tumours not classed with other disease of organ affected—continued.</i>																
Lung Non-malignant ..	—	2	—	—	—	1	—	—	—	—	—	—	—	1	—	—
.. Nature unstated ..	69	26	—	—	1	3	5	1	17	5	27	7	15	6	4	4
Parotid Mixed tumour ..	5	5	—	—	—	—	—	—	—	—	2	2	2	—	1	3
.. Other benign ..	1	1	—	—	—	—	—	—	—	—	—	—	—	1	1	—
.. Nature unstated ..	1	1	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Esophagus .. Non-malignant ..	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
.. Nature unstated ..	3	2	—	—	—	—	—	1	—	—	—	—	1	—	2	1
Stomach .. Fibroid ..	3	1	—	—	—	—	—	—	—	—	1	1	1	—	1	—
.. Other benign ..	2	3	—	—	—	—	1	—	—	1	1	—	—	2	—	—
.. Nature unstated ..	4	6	—	—	—	—	—	—	—	—	—	1	3	2	1	3
Intestine .. Polypus ..	2	1	—	—	—	1	—	—	2	—	—	—	—	—	—	—
.. Other benign ..	5	3	—	—	1	—	—	—	—	—	3	1	1	1	—	1
.. Nature unstated ..	19	19	—	—	—	—	1	1	2	2	3	1	5	4	8	11
Rectum Polypus ..	1	4	—	—	—	—	—	—	—	—	—	1	—	2	1	1
.. Other benign ..	1	2	—	—	—	—	—	—	—	1	—	1	—	—	—	—
.. Nature unstated ..	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Liver Non-malignant ..	1	2	1	—	—	1	—	1	—	—	—	—	—	—	—	—
.. Nature unstated ..	6	1	—	—	1	—	—	—	—	—	1	—	3	—	1	1
Pancreas .. Cyst.. ..	2	11	—	—	—	1	—	—	1	3	—	3	1	3	—	1
.. Nature unstated ..	3	3	—	—	—	1	—	—	—	1	1	—	2	1	—	—
Kidney Cyst.. ..	2	1	—	—	—	—	—	—	—	1	1	—	—	—	1	—
.. Other benign ..	4	5	—	—	1	2	—	—	—	1	3	—	—	1	—	1
.. Nature unstated ..	10	9	—	—	—	1	1	—	2	1	5	2	1	3	1	2
Bladder Papilloma ..	110	43	—	—	1	1	1	1	11	1	19	9	39	15	39	16
.. Polypus ..	1	2	—	—	—	—	—	—	—	—	—	—	—	1	1	1
.. Other benign ..	2	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—
.. Nature unstated ..	8	3	—	—	—	—	—	—	—	—	2	1	3	—	3	2
Spleen Nature unstated ..	3	—	1	—	—	—	—	—	—	—	1	—	1	—	—	—
Prostate.. .. Non-malignant ..	2	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—
.. Nature unstated ..	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Breast Non-malignant ..	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—
.. Nature unstated ..	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2
Jaw Non-malignant ..	1	4	—	1	—	—	—	1	—	—	—	—	1	1	—	1
Spine Glioma ..	—	3	—	1	—	1	—	1	—	—	—	—	—	—	—	—
.. Other benign ..	2	1	1	—	—	—	—	—	—	—	1	—	—	—	—	1
.. Nature unstated ..	9	6	—	—	2	1	—	2	2	—	3	3	2	—	—	—
Neck Non-malignant ..	4	1	—	—	—	—	—	—	1	—	1	1	1	—	1	—
.. Nature unstated ..	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Thorax Non-malignant ..	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
.. Nature unstated ..	6	1	—	—	—	—	—	—	—	—	2	—	3	—	1	1
Abdomen .. Cyst ..	1	2	—	—	1	—	—	—	—	1	—	—	—	1	—	—
.. Other benign ..	2	5	—	—	1	—	—	1	—	1	—	—	1	1	—	2
.. Nature unstated ..	10	24	1	—	—	1	—	—	1	2	2	5	1	6	5	10
Other sites .. Non-malignant ..	36	47	6	6	6	5	4	5	6	9	6	7	7	10	1	5
.. Nature unstated ..	10	10	2	—	1	1	—	1	—	—	4	4	1	3	2	1
Site not stated .. Non-malignant ..	2	4	1	—	—	1	—	1	—	—	—	2	1	—	—	—
.. Nature unstated ..	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—
Total (54 and 55)	1166	1718	89	93	161	191	128	281	244	423	280	294	168	245	96	191
Total, all tumours ..	1518	1718	89	93	161	191	128	281	246	423	329	294	313	245	252	191
.. benign tumours ..	811	1094	38	49	75	115	50	200	83	292	142	152	218	155	205	131
.. nature unstated ..	707	624	51	44	86	76	78	81	163	131	187	142	95	90	47	60

Deaths assigned to *uterine fibroid*, myoma, fibroma or fibromyoma as cause numbered 400 in 1934. These do not represent the whole of the deaths in whose causation such tumours were concerned, as may be seen from the numbers, given below, of deaths assigned during 1931–33 to other associated causes by the operation of the rules of precedence for local diseases.

	1931.	1932.	1933.
Assigned to No. 54a	390	406	384
Assigned to other cause-groups	100	86	77
<i>including Heart diseases</i>	28	20	19
<i>Intestinal obstruction</i>	25	27	24
<i>Appendicitis</i>	3	5	3
<i>Diabetes</i>	4	2	4
<i>Exophthalmic goitre</i>	3	7	4

Some of the deaths from “intestinal obstruction” were due to paralytic ileus following operations for fibroids.

The standardized rate of mortality classed to the uterine tumours as cause has increased during the last 10 years from 16·7 per million in 1922–24 to 19·1 in 1932–34 as shown below.

Rates per million women living at ages :—

	15—	35—	45—	55—	65—	75 and up.	All ages.
1922–24	3·0	32·7	54·8	23·8	34·8	47·8	16·7
1932–34	3·5	35·6	60·1	19·5	27·6	62·8	19·1

There has been a 10 per cent. increase at ages under 55 and a 20 per cent. decrease at 55–75. These changes are probably indicative of greater incidence of fibroids prior to age 50 with the declining birth-rate, the increase of 31 per cent. at ages over 75 being due perhaps to more complete description of cause of death at these ages.

Ovarian cysts were assigned as the cause of 259 deaths in 1934, and the numbers classed to other causes associated with ovarian cyst during 1931–33, were :—

	1931.	1932.	1933.
Assigned to No. 54a	306	270	269
Assigned to other cause-groups	87	81	73
<i>including Heart diseases</i>	37	28	38
<i>Intestinal obstruction</i>	23	16	11
<i>Appendicitis</i>	3	5	2
<i>Diabetes</i>	1	7	3
<i>Exophthalmic goitre</i>	—	2	—

Standardized mortality directly due to ovarian cyst was 12·7 per million in 1932–34 compared with 11·4 a decade earlier, but the rate for undefined tumours of the ovary, consisting no doubt

largely of cysts, decreased in the same period by 0·9. The changes at separate ages are shown below.

Rates per million women living at ages :—

	0—	15—	35—	45—	55—	65—	75 and up.	All ages.
1922–24	0·1	4·1	12·3	16·7	25·0	56·7	79·3	11·4
1932–34	0·1	3·7	11·8	16·6	23·1	45·6	104·5	12·7

No appreciable change has occurred at ages under 55, but the rates at 55–75 register a decline. The increase, probably only apparent, at ages over 75 accounts for the whole of the increase in the standardized rate.

Adenoma of the thyroid is not included in this table, but is classed to No. 66 (a), Simple goitre.

Deaths ascribed to pituitary tumour have increased from 7 in 1913 to 54 in 1934. Deaths from tumour of the lung increased from numbers ranging between 11 and 21 during 1912–19 to 83 in 1932, 74 in 1933, and 97 in 1934. Like lung cancer, which has also increased rapidly (Table LXIII), they affect males much more than females. The ratios of malignant to benign tumours of the mediastinum, lung, and abdominal organs suggest that large proportions of those returned as of unknown nature were probably malignant.

59. Diabetes.—The deaths allocated to this disease numbered 6,471, 2,496 of males and 3,975 of females, corresponding to standardized death-rates of 91 for males and 115 for females. This rate has been in excess for females in each year from 1923 onwards, whereas before that date excess for males was an invariable rule, though its amount had long been decreasing.

The trend of diabetes mortality since 1861–70 was discussed in the Review for 1933. At ages under 45 male standardized mortality increased until 1891–1900, remained stationary until 1912, and then rapidly increased to 1915. The rates of the next 5 years, relating to civilians only, were greatly influenced by selection, but from 1920 to 1922 the rate was again rising. The introduction of insulin in 1923 was accompanied by a drop from 41 per million in 1922 to 26 in 1924 and a further gradual fall has occurred to 20 in 1934. At ages 45–55 male mortality behaved similarly; it remained stationary, about 160 per million, from 1891–1900 to 1913, fluctuated during 1914–20 and had not quite regained its former level by 1922. The following years witnessed a drop from 143 to a mean level of 88 in 1926–28 and 91 in 1931–34 (Table LXVII).

Mortality of females at ages under 45, steadily increased until 1901–10, when the standardized rate was 32 per million, and fluctuated about that level during the next decade. With the use of insulin the rate fell from 34 in 1922 to 25 in 1924 and has remained between 21 and 25 since, being 21 in 1934. At ages 45–55 the rate was steadily rising up to 1913, then rapidly declined during 1915–18

but increased again almost as quickly in the succeeding years to 1923. The fall which then occurred has not been so well maintained as at the earlier ages; the introduction of insulin interrupted for several years the upward trend of registered mortality at this age period, just as food restriction and other factors had done in 1915-18.

There is no reason to suppose from the behaviour of the death-rates in the pre-insulin period or from other evidence that the rate of incidence of new cases of diabetes at ages under 55 has undergone any diminution during the past 10 years. On the contrary there is reason to believe that it has increased to some extent. Assuming a constant incidence rate, the deaths which would have occurred at ages under 55, had no change in therapy taken place, may be calculated by applying the 1920-22 death-rates to the

Table LXVII.—Mortality from Diabetes in 1920-22 and in subsequent years.

	Standardized Rates.			0-	15-	25-	35-	45-	55-	65-	75 and up
	All ages	0-55	55 and up								

DEATH-RATES PER MILLION LIVING.

Males :—											
1920-22 ..	93.7	47.9	477.5	14	42	60	69	133	309	661	772
1931 ..	88.1	29.5	580.3	12	22	30	38	97	315	821	1,161
1932 ..	92.4	28.9	625.6	10	21	30	45	93	320	897	1,310
1933 ..	92.3	28.5	628.2	13	26	30	36	80	325	888	1,326
1934 ..	91.0	27.2	627.0	10	22	27	32	94	331	889	1,292
Females :—											
1920-22 ..	90.1	43.1	483.9	16	35	48	62	124	355	656	632
1931 ..	110.9	33.4	762.0	11	26	31	45	121	473	1,097	1,218
1932 ..	112.4	32.5	783.3	13	20	29	46	118	485	1,143	1,219
1933 ..	114.3	33.5	793.0	12	25	30	48	118	470	1,178	1,275
1934 ..	114.9	30.7	821.4	10	18	28	44	123	490	1,204	1,344

MORTALITY OF LATER YEARS PER CENT. OF THAT IN 1920-22.

Males :—											
1923 ..	96	79	110	79	79	80	87	74	104	113	114
1924 ..	92	72	108	64	69	63	75	83	104	105	122
1925 ..	87	67	104	79	52	72	62	70	93	106	120
1926 ..	92	68	112	93	67	60	70	68	105	112	124
1927 ..	94	67	116	79	74	68	58	63	107	116	133
1928 ..	97	63	126	93	60	55	55	68	107	136	140
1929 ..	101	73	125	86	60	60	90	79	106	130	150
1930 ..	99	65	128	71	57	63	59	74	109	130	154
1931 ..	94	62	122	86	52	50	55	73	102	124	150
1932 ..	99	60	131	71	50	50	65	70	104	136	170
1933 ..	99	59	132	93	62	50	52	60	105	134	172
1934 ..	97	57	131	71	52	45	46	71	107	134	167
Females :—											
1923 ..	104	95	112	69	86	92	95	115	110	112	116
1924 ..	98	75	116	69	80	67	76	80	110	118	116
1925 ..	104	80	122	69	86	67	85	90	111	131	128
1926 ..	101	74	121	56	71	73	82	80	113	127	128
1927 ..	112	76	139	69	71	67	73	91	131	135	173
1928 ..	112	79	138	69	74	69	66	102	118	147	163
1929 ..	123	81	155	69	63	65	84	106	135	157	196
1930 ..	119	72	155	69	51	56	71	99	131	165	193
1931 ..	123	77	157	69	74	65	73	98	133	167	193
1932 ..	125	75	162	81	57	60	74	95	137	174	193
1933 ..	127	78	164	75	71	63	77	95	132	180	202
1934 ..	128	71	170	63	51	58	71	99	138	184	213

population at the corresponding ages in the year in question. These expected deaths of both sexes in the years 1931, 1932, 1933, and 1934 are compared below with the actual deaths registered.

		Under 45	45-55	Under 55	Deficiency under 55
1931	{ Expected ..	1,112	630	1,742	
	{ Actual.. ..	702	540	1,242	500
1932	{ Expected ..	1,116	634	1,750	
	{ Actual.. ..	691	527	1,218	532
1933	{ Expected ..	1,117	637	1,754	
	{ Actual.. ..	723	501	1,224	530
1934	{ Expected ..	1,118	641	1,759	
	{ Actual.. ..	626	549	1,175	584

There has been an annual deficiency of 500 to 600 deaths from the calculated number, and it is reasonable to conclude that these represent minimal estimates of the deaths which would have occurred at ages under 55 under pre-insulin conditions but which were postponed by insulin either (*a*) to some age over 55, or (*b*) to some age under 55 with assignment of death to some cause other than diabetes. With regard to the latter eventuality, the death of a diabetic who has been receiving insulin will usually have mention of diabetes as a contributory cause and will be assigned to diabetes in classification except when the associated cause is an infective condition, acute intercurrent disease or general disease such as cancer. Prolongation of life of young adults means a greater risk of dying before 55 from those causes which take precedence over diabetes in classification, and some fraction of the 500-600 deaths must be so accounted for, but these are probably more than offset by an increased incidence which the basis of calculation has not allowed for.

If this is so, the number of deaths in defect, 584 in 1934, can be regarded as the excess of deaths postponed from the age group 45-55 to the group 10 years older over the deaths postponed from the group 10 years younger to the group 45-55. The expected deaths at 45-55 numbered 641, of which 584 or 91 per cent. were on this assumption postponed to an age group 10 years older, and from this it follows that the average lengthening of life of the diabetics who in the pre-insulin period would have died before 55 has been about 9 years. This estimate is an average for all diabetics in the population who would have died before 55, whether insulin treated or not.

At ages 55-65 mortality steadily increased up to 1915 for both sexes, declined abruptly in the period of food restriction, and was again rising from 1920 to 1922 (Review for 1933, Diagram 4). From 1923 onwards the male rate at 55-65 has not appreciably changed whilst the female rate increased by 35 per cent. in excess of 1920-22 by 1929, and has fluctuated about that level since. Male mortality

at ages over 65, which had not regained the 1911-14 level by 1922, remained stationary until 1925 and then rose rapidly to 1928, with a further increase since at ages over 75, though not at 65-75. The rise in the female rates at these ages has been sustained with few interruptions since 1918.

The reasons for the continuous increase in death-rates attributed to the senile form of diabetes, due in part to rising incidence perhaps but in greater part to increasing recognition of the condition and mention of it on death certificates, has been frequently commented upon. Having regard to (a) the steep upward trend of registered diabetes mortality at ages over 55 from 1861-70 to 1915, when the period of food restriction resulted in a profound and prolonged interruption in this trend, (b) the transfer of deaths from earlier ages owing to postponement of the fatal issue by insulin therapy, and (c) the fact that for various reasons the new therapy is less frequently applied to diabetics of advanced age, it is not surprising that registered mortality at ages over 65 continues to increase. It was shown in the Review for 1933 that, if the death-rates at 55-65, 65-75 and over 75 had increased year by year since 1920-22 by the same mean annual increments as were operative during the undisturbed period from 1901-10 to 1915, the expected deaths at ages over 55 in 1933 would have been 4,487. The actual deaths registered numbered 5,054, an excess of 567 which was approximately equal to the deficiency calculated above at ages under 55. The recent trend of the mortality rates could therefore be adequately explained by a transfer of deaths up the age scale (sufficient to postpone about 500 deaths in each year from before 55 to after that age), superimposed upon a resumption since 1921 of the pre-1915 trend of mortality rates at the various ages.

71(a). **Pernicious Anæmia.**—The progress of mortality since 1927, when a new and effective treatment came into use for this disease is revealed in Table LXVIII, where annual rates at various ages are expressed in terms of the corresponding rates in the triennium preceding 1927. The actual rates in greater detail of age in each year from 1922 to 1931 were shown in the Review for 1931, Table XLVIII. In 1934 the standardized rates, which had been increasing since the sudden fall registered in 1928, were below those of 1932 and 1933, an improvement being noticeable at each separate age between 25 and 75. The greatest relative decline in mortality has occurred at ages 25-45 for both males and females.

As for diabetes, the new remedies are in general only effective in prolonging life so long as treatment is continued, and unless the patient eventually dies of some acute or general disease to which precedence is given in the classification of deaths due to joint causes, or without mention being made on the certificate of the pernicious anæmia, the expected effect on the mortality statistics would be a temporary reduction in annual deaths at each age,

followed by a gradual return to the original total with a higher average age distribution. This assumes a constant incidence of new cases, whereas there is reason to believe that the number of recognised cases of pernicious anæmia and other blood diseases is increasing. The total deaths registered in the 9 years 1926 to 1934 have numbered 2,780, 2,655, 1,854, 1,955, 2,150, 2,226, 2,591, 2,428, 2,385, which indicates a return by 1932 almost to the 1927 level, and this suggests that any absolute reduction in the fatality of pernicious anæmia brought about by the new remedies was being balanced by an increased incidence or recognition of the disease. Since 1932, however, there has been a decline in the total deaths.

Table LXVIII.—Mortality from Pernicious Anæmia per Million living in 1931, 1932, 1933 and 1934 and per cent. of the rate for 1924–26 in each year 1927 to 1934.

		MALES.						FEMALES.					
		All Ages*	0–	25–	45–	65–	75 and up	All Ages*	0–	25–	45–	65–	75 and up
MORTALITY PER MILLION LIVING.													
1931	..	34	3	13	98	311	301	43	5	27	134	328	231
1932	..	39	5	13	111	368	339	49	5	29	149	379	235
1933	..	35	3	13	104	317	322	46	4	30	130	367	326
1934	..	34	5	12	94	306	325	44	5	26	126	349	371
MORTALITY PER CENT. OF THAT IN 1924–26.													
1927	..	98	84	91	96	106	114	97	86	90	98	98	109
1928	..	65	102	59	55	77	92	67	77	56	64	78	91
1929	..	70	78	59	58	86	133	67	66	53	64	84	109
1930	..	76	74	69	71	85	121	72	45	63	68	84	138
1931	..	74	70	54	64	89	149	74	58	58	74	91	112
1932	..	85	106	53	72	106	167	84	56	61	83	106	162
1933	..	76	69	56	68	91	159	79	47	64	72	102	158
1934	..	74	98	49	61	88	161	76	59	55	70	97	180

* Standardized.

Comparison of the age distribution of the 2,585 deaths in 1925 with that of the 2,591 deaths in 1932 reveals a transfer of deaths up the age scale during the interval, resulting in a decrease of 318 deaths at ages under 55 and an increase of 331 at ages over 65. The average lengthening of life of which this is a sign can be estimated by applying the 1921–26 death-rates to the population at each age in each of the following years, finding from the resulting calculated deaths the expected mean age at death, and comparing these values with the actual mean ages at death from pernicious anæmia in the corresponding years.

Table LXIX indicates that from 1926 to 1934 the rise in actual mean age was greater than the expected rise by 3·1 years for males and by 3·9 years for females. Provided, therefore, that the age-distribution of incidence has not changed in the interval there has been a mean lengthening of life since 1926 for the whole population of pernicious anæmia cases, however treated and of all ages amounting to 3 to 4 years.

Table LXIX.—Pernicious Anæmia—Actual and Calculated Mean Ages at Death, 1921 to 1934.

	Males.			Females.		
	Actual.	Calculated.	Difference.	Actual.	Calculated.	Difference.
1921	55·9	56·2	—0·3	53·5	54·3	—0·8
1922	55·6	56·2	—0·6	54·7	54·4	+0·3
1923	55·9	56·3	—0·4	54·2	54·5	—0·3
1924	57·4	56·4	+1·0	54·8	54·6	+0·2
1925	57·0	56·5	+0·5	55·2	54·6	+0·6
1926	56·9	56·7	+0·2	55·5	54·9	+0·6
1927	58·5	56·8	+1·7	55·9	54·9	+1·0
1928	58·0	57·0	+1·0	57·1	55·1	+2·0
1929	59·8	57·1	+2·7	58·1	55·2	+2·9
1930	59·4	57·2	+2·2	58·6	55·9	+2·7
1931	60·9	57·4	+3·5	58·7	55·7	+3·0
1932	60·8	57·5	+3·3	59·8	55·8	+4·0
1933	61·1	57·6	+3·5	60·0	55·9	+4·1
1934	61·0	57·7	+3·3	60·5	56·0	+4·5

The international group No. 71a, with heading "Pernicious Anæmia," on which all these statistics are based, includes also aplastic, essential or hæmolytic anæmias, Addison's anæmia and "progressive" or "profound" anæmias whose cause cannot be ascertained. At ages under 10 true pernicious anæmia is unusual and almost all the deaths belong to one or other of the alternative varieties mentioned above. This also applies to a considerable proportion of the deaths at 10–20.

Agranulocytosis (Agranulocytic Angina).—The deaths attributed to this condition, alone or in association with other causes, numbered 2 in 1930, 3 in 1931, 7 in 1932, 31 in 1933 and 39 in 1934, the classification being in some instances to causes such as pulmonary tuberculosis or lobar pneumonia with agranulocytosis as a contributory or associated cause.

Pending a clearer definition of the disease as an established clinical entity, the deaths were classed until the end of 1934 to sub-groups 115(3) or 115(4) when it was described as angina, or

with the unclassified anæmias in No. 71 *b*(2) when described as agranulocytosis. Since the two descriptions are now regarded as synonyms, the angina being secondary to the blood condition, and since the latter is not characterised by "anæmia" in the usually accepted meaning of the term but by an aleukæmia affecting the granular leucocytes, from 1935 onwards a new subgroup to comprise both descriptions, with title No. 72 *b*(2) aleukæmia (agranulocytosis), will be introduced into Tables 6, 7, 21 and 23, and No. 72*b* aleukæmia (lymphadenoma) will be designated 72 *b*(1).

Table LXX classifies the 82 deaths attributed wholly or in part to the condition in England and Wales during 1930-34 by sex and age, with distinction of those described as (AA) agranulocytic angina or agranulocytosis with mention of a throat lesion, and those described as (A) agranulocytosis without mention of a throat lesion. Further details of the causes stated on the certificates of deaths included in this table were given in the Review for 1933, p. 88.

Table LXX.—Agranulocytosis : Deaths attributed to the Condition (alone or in association with Other Causes), by Sex and Age, 1930-1934.

A—Agranulocytosis without mention of a throat lesion.
AA—Agranulocytic angina, or agranulocytosis with throat lesion.

	1930.		1931.		1932.				1933.				1934.				Total.	
	M.	F.	M.	F.	M.		F.		M.		F.		M.		F.		M.	F.
	A.	AA.	A.	AA.	A.	AA.	A.	AA.	A.	AA.	A.	AA.	A.	AA.	A.	AA.		
0- ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1- ..	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	2
5- ..	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1
10- ..	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1
15- ..	—	—	—	—	—	—	1	—	—	1	1	1	—	2	—	2	3	5
20- ..	—	—	—	—	1	—	—	—	—	1	—	1	—	2	—	—	4	1
25- ..	—	—	—	1	—	—	—	—	—	—	1	1	1	—	—	3	1	6
30- ..	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	3
35- ..	—	—	—	1	—	—	1	—	—	1	—	—	—	—	1	3	1	6
40- ..	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—
45- ..	—	—	1	—	—	1	1	—	1	—	—	3	1	—	—	2	4	6
50- ..	—	1	—	—	—	—	—	—	—	—	1	3	—	1	—	1	1	6
55- ..	—	—	—	—	—	—	—	1	—	—	1	1	1	1	2	1	2	6
60- ..	—	—	—	—	—	—	—	1	—	—	1	2	—	1	—	2	1	6
65- ..	—	—	—	—	—	—	—	—	1	—	—	3	—	1	—	2	2	5
70- ..	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	4	—	5
75- ..	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—	1	1
80- ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1
All ages	—	2	1	2	1	1	3	2	1	4	7	19	3	10	3	23	21	61

75. Alcoholism.—This heading in the International List of causes of death excludes organic disease attributed to alcoholism, so, in order to obtain as complete information as possible with regard to mortality from over-indulgence in alcohol, all the deaths in certification of which any mention of alcohol appears are assembled

Table LXXI.—Deaths from or associated with Alcoholism ; Death-rate per Million from the Combined Causes and from Cirrhosis of Liver not returned as Alcoholic, 1921-1934.

			Number of Deaths.										Death rate per million persons.	
			Returned as connected with alcoholism.											
													Alcoholism No. 75.		Cirrhosis of liver 124 (a)		Heart diseases 90-95.		Violent deaths 163-198.		Other causes.		Returned as alcoholism or associated therewith.	Cirrhosis of liver not returned as alcoholic 124 (b).
			M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
1921	..	..	127	55	100	54	41	17	61	11	125	56	17	47
1922	..	..	117	47	103	47	41	14	52	16	125	59	16	46
1923	..	..	104	47	98	54	22	12	46	16	106	57	15	42
1924	..	..	94	33	90	57	36	8	44	7	120	53	14	42
1925	..	..	95	55	87	49	25	19	34	6	90	48	13	44
1926	..	..	76	39	82	50	31	20	36	17	90	58	13	44
1927	..	..	84	24	162	101	40	22	37	14	176	92	19	41
1928	..	..	74	34	210	110	54	34	30	10	205	102	22	40
1929	..	..	85	49	175	83	69	38	41	11	206	75	21	38
1930	..	..	49	45	144	71	46	25	35	10	147	75	16	36
1931	..	..	40	41	162	99	45	35	24	2	136	45	16	34
1932	..	..	61	34	115	62	42	19	18	4	99	45	12	32
1933	..	..	43	30	115	77	52	19	24	10	79	35	12	26
1934	..	..	33	19	125	84	38	22	17	9	97	50	12	28

in Table LXXII. These numbered 494 in 1934, compared with 484 in 1933 and 542 in 1924.

After 1926 the change in the form of the medical certificate produced a temporary disturbance, consisting, as Table LXXI indicates, in a sudden increase in deaths attributed to various causes with mention of alcoholism. Violent deaths with associated alcoholism were not so affected, but deaths attributed to heart diseases with mention of alcoholism increased from 51 in 1926 to 107 in 1929, and have since declined to 60. The death-rate per million due to cirrhosis of the liver with mention of alcohol increased from 3 in 1926 to 8 in 1928, and has since fallen to 5 in 1933 and 1934 (Table 7), and the rate for cirrhosis without mention of alcohol has declined continually from 44 in 1926 to 28 in 1934. Deaths attributed to causes other than violence, heart disease or cirrhosis of the liver, with mention of alcoholism, increased from 114 in 1933 to 147 in 1934.

The number of deaths attributed solely to alcoholism without mention of other causes, 52, is the lowest recorded.

90-95. Heart Diseases.—The number of deaths allocated to this cause, 108,962, 52,718 of males and 56,244 of females, was as usual larger than for any other item in the list of causes.

These numbers are equal to crude death-rates per million of 2,716 for males and 2,671 for females. When standardized, the revised rates are considerably reduced to 1,897 for males and 1,565 for females, but still remain in this form the highest in any year for males and in any year except 1929, 1931 and 1933 for females (Table 8).

As pointed out in previous Reviews the recent increase of crude mortality (Table 7) from heart diseases is due, among other causes, to the increasing age of the population and to more frequent record

Table LXXII.—Deaths from or connected with Alcoholism—1934.

	All Ages.		Under 25		25—		35—		45—		55—		65—		75—	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
75. Deaths attributed solely to alcoholism	33	19	—	—	1	1	6	5	14	4	10	6	2	1	—	2
Deaths attributed to other causes in conjunction with alcoholism—																
11. Influenza	3	1	—	—	—	—	—	—	2	—	—	—	1	1	—	—
23. Tuberculosis of the respiratory system	3	—	—	—	—	—	1	—	1	—	1	—	—	—	—	—
34. Syphilis	4	—	—	—	—	—	1	—	2	—	1	—	—	—	—	—
36. Septicæmia	1	1	—	—	—	—	1	1	—	—	—	—	—	—	—	—
38. Malaria	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
45-53. Cancer	2	—	—	—	—	—	—	—	—	—	1	—	—	—	1	—
54 (a) Fibroid of uterus	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
58. Gout	3	—	—	—	—	—	—	—	1	—	2	—	—	—	—	—
59. Diabetes	2	2	—	—	—	—	—	—	—	1	1	1	1	—	—	—
69 (2) Obesity	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
70. (a) Purpura	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
71a. Pernicious anæmia	—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—
79. Meningitis	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
82. Cerebral hæmorrhage, apoplexy, etc.	6	1	—	—	1	—	—	—	—	1	3	—	1	—	1	—
85. Epilepsy	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
87 (b) Neuritis, neuralgia	7	11	—	—	1	—	—	—	1	3	4	7	1	—	—	1
87 (c) Paralysis agitans	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
87d. Disseminated sclerosis	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
90. Pericarditis	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
92. Valvular disease of heart	5	2	—	—	—	—	1	—	—	1	2	—	1	—	1	1
93a. Acute myocarditis	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—
93 b (1) Fatty heart	8	5	—	—	1	—	2	1	1	1	3	2	—	1	1	—
93 b (2) Cardiovascular degeneration	4	1	—	—	—	—	2	—	—	—	2	1	—	—	—	—
93 b (3) Other or unspecified myocardial disease	12	10	—	—	1	—	—	1	4	1	6	4	1	4	—	—
93 c Myocarditis not distinguished as acute or chronic	5	1	—	—	—	—	—	—	1	—	1	—	3	—	—	1
94. Diseases of the coronary arteries	3	1	—	—	—	—	—	—	1	—	—	—	2	—	—	1
95 b (2) Heart disease (undefined)	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
97. Arterio-sclerosis	6	4	—	—	—	—	—	—	2	1	2	2	2	1	—	—
99. Other diseases of the arteries	2	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—
101. Axillary abscess	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
106. Bronchitis	3	—	—	—	—	—	—	—	1	—	1	—	1	—	—	—
107. Broncho-pneumonia	6	2	—	—	—	—	2	—	1	—	3	—	—	1	—	1
108. Lobar pneumonia	17	7	—	—	1	—	3	2	7	3	5	2	1	—	—	—
115 (1) Dental sepsis	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
115 (3) Diseases of the tonsils	3	—	—	—	—	—	1	—	1	—	—	—	—	—	1	—
115 (4) Ulcerative pharyngitis	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
117a. Gastric ulcer	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
117b. Ulcer of the duodenum	3	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—
118 (1) Inflammation of the stomach	3	7	—	—	1	—	—	1	—	—	1	3	1	1	—	2
119 & 120 a (2) Gastro-enteritis	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
122a (1) Strangulated hernia	2	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—
122a (2) Inguinal hernia	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
122 (b) Intestinal obstruction	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
123 (2) Diverticulitis	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
124 (a) Cirrhosis of the liver	125	84	—	—	3	—	14	8	24	25	51	21	29	22	7	5
127 (1) Suppuration of gall bladder	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
128. Acute pancreatitis	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
131. Chronic nephritis	8	5	—	—	—	—	—	—	6	2	2	1	—	2	—	—
137. Adenoma of prostate gland	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
139a (2) Pyosalpinx	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—
152 (2) Whitlow	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—
163-171. Suicide	5	—	—	—	1	—	2	—	2	—	—	—	—	—	—	—
186 (pt.) Injury by fall	5	5	—	—	2	—	—	—	1	—	1	3	1	2	—	—
186 (pt.) Injury by crushing (vehicles, railway, etc.)	4	—	—	—	—	—	1	—	—	—	2	—	1	—	—	—
Other violence	3	4	1	—	—	—	1	—	—	3	1	—	—	1	—	—
TOTAL	310	184	1	—	10	4	40	20	79	49	114	58	53	39	13	14

of myocardial degeneration in certification of the deaths of old people. The introduction of the new form of death certificate has led to more frequent statement of this or other forms of heart disease as a subsidiary cause, and by the operation of the rules of selection of joint causes this often results in the death being transferred to the heart group as a consequence.

Table LXXIII shows how the rates for 1934 have been affected by increasing mention of myocarditis or myocardial or cardiovascular degeneration as a cause of death of persons over 65, and what, but for them, would have been the course of recent mortality from diseases of the heart. This has been done by ascertaining and deducting from the standardized death-rate from all heart diseases (Table 8) that portion of it for which chronic myocardial disease (other than fatty heart) at ages over 65 was responsible in each year 1921-34, that is to say, the deaths at this age in the

Table LXXIII.—Deaths in Standard Million from Heart Diseases at all ages, and from senile myocarditis at ages over 65 in 1921 and 1931-34 ; also the mortality in each year 1922-34 per cent. of that in 1921.

		Males.			Females.		
		All Heart Diseases.	" Senile Myo-carditis " (see text).	Col. 1 less col. 2.	All Heart Diseases.	" Senile Myo-carditis " (see text).	Col. 4 less col. 5.
		(1)	(2)	(3)	(4)	(5)	(6)
1921	..	1,203	154	1,049	1,107	145	962
1931	..	1,845	746	1,099	1,592	646	946
1932	..	1,848	779	1,069	1,560	661	899
1933	..	1,896	818	1,078	1,616	705	911
1934	..	1,897	820	1,077	1,565	703	862
Rates for subsequent years per cent. of those for 1921.							
1922	..	108	129	105	110	129	107
1923	..	101	136	95	102	134	97
1924	..	105	165	97	107	158	99
1925	..	110	203	96	110	192	98
1926	..	108	219	92	107	210	92
1927	..	117	259	97	118	248	98
1928	..	123	296	97	122	285	97
1929	..	153	450	109	150	427	108
1930	..	142	421	101	134	388	96
1931	..	153	484	105	144	446	98
1932	..	154	506	102	141	456	93
1933	..	158	531	103	146	486	95
1934	..	158	532	103	141	485	90

standard million derived from the three groups 93*b* (2), 93 (i) (3) and 93 (c), corresponding to No. 90 (7) prior to 1931. The rates for the years 1922 to 1930 were shown in detail in Table L of the Review for 1931.

The crude death-rate from heart disease has increased since 1921 by 90 per cent., but the standardized rate has increased by 58 per cent. for males and 41 per cent. for females. When further allowance is made for the disturbing influences mentioned above, the increase is seen to have been only 3 per cent. for males and there has been a decrease of 10 per cent. for females.

Table LXXIII also shows how rapid has been the increase for each sex of mortality ascribed to senile myocarditis, the rates for 1934 being about five times those of 1921. Its contribution to total heart disease mortality has increased from 13 per cent. in 1921 to 47 per cent. in 1934.

Table LXXIV compares the death-rates at different ages in 1934 with those of ten years earlier for pericarditis, endocarditis and valvular disease, and angina pectoris. Pericarditis mortality has fallen for each sex at every age under 75, the extent of the decline amounting to about one-third at ages 45 to 75. At ages under 5 this cause contributes about 40 per cent. of all heart disease deaths of boys and 30 per cent. for girls.

Table LXXIV.—Pericarditis, Valvular and Coronary Disease. Mortality per million living by Sex and Age: 1924 and 1934.

	90. Pericarditis.				91, 92. Endocarditis and Valvular Disease.				94. Angina pectoris Coronary Disease.			
	Males.		Females.		Males.		Females.		Males.		Females.	
	1924.	1934.	1924.	1934.	1924.	1934.	1924.	1934.	1924.	1934.	1924.	1934.
0-	10	8	9	6	19	12	16	13	—	—	—	—
5-	7	4	8	4	94	96	103	122	—	—	—	—
15-	4	3	5	2	147	161	185	196	—	—	—	—
25-	6	5	3	2	220	176	249	241	2	8	—	1
35-	7	6	5	4	375	281	406	346	20	83	7	22
45-	17	10	9	6	755	605	766	588	83	415	19	82
55-	20	13	11	9	1,750	1,367	1,708	1,133	264	1,174	86	358
65-	41	27	25	16	4,354	3,044	4,067	2,839	532	2,464	200	1,092
75 and up ..	19	23	21	22	7,323	5,698	7,436	5,356	661	3,541	329	1,915
All ages (standardized)	9	7	7	5	548	428	555	433	53	248	19	94

Endocarditis and valvular disease of all forms have been combined in the table in order to eliminate as far as possible the effect of the changes in the international list and of transfers from one group to another. The effects of the introduction of the new form of death certificate on the one hand and of the diminishing size of the group of "undefined heart disease" on the other must be borne in mind, but both these factors must have operated in the direction of increasing rather than decreasing the deaths assigned to this large group. The fall in the mortality since 1924, amounting to 22 per

cent. in the standardized rate for each sex, is the more difficult to account for. The decline is evident at every age except 5–25, 1934 mortality expressed as a percentage of 1924 being as follows :

		0—	5—	15—	25—	35—	45—	55—	65—	75 and up.
Males	..	63	102	109	80	75	80	78	70	78
Females	..	81	118	106	97	85	77	66	70	72

Table LXXV analyses for 1934 and ten years previously, the deaths classed to those groups of heart disease which have not been subject to great changes in certification and nomenclature, that is to say after excluding the groups specified at the foot of the table. The contribution to this total made by malignant endocarditis has slightly increased since 1924, whilst other acute endocarditis has diminished. The contributions of aortic and mitral disease, alone or in combination, have each increased whilst that of other or unspecified valvular disease has declined, this being indicative of more precise description of the lesion. Aortic disease at ages 15–45 contributes, however, a smaller proportion of deaths than in 1924.

Table LXXV.—Proportionate mortality* assigned to various groups of Heart Diseases, by Sex and Age, 1924 and 1934.

List Nos.		Group.	1924.							1934.						
1924.	1934.		All Ages.	0-	5-	15-	45-	65-	75 & up.	All Ages.	0-	5-	15-	45-	65-	75 & up
<i>Males.</i>																
87	90	Pericarditis	13	327	66	20	13	8	2	11	414	44	19	10	7	3
88 (1)	91 (1)	Malignant endocarditis ..	35	164	91	141	23	3	4	37	138	127	136	28	8	2
88 (2)	91 (2), 92 (4)†	Other acute endocarditis ..	18	164	160	64	6	3	3	10	172	101	36	4	1	—
90 (1)	92 (1)	Aortic disease	137	—	14	109	169	135	117	153	—	9	88	188	163	145
90 (2)	92 (2)	Mitral disease	225	127	283	208	208	234	256	254	138	317	299	238	246	251
90 (3)	92 (3)	Aortic and mitral disease	31	—	28	47	32	26	25	45	—	62	54	47	42	36
90 (4)	92 (4)§, (5)	Other endocarditis and valvular disease ..	388	200	320	306	386	421	422	311	138	334	226	302	335	364
88 (3)	93 (a), (c)†	Acute myocarditis	13	—	20	48	7	4	9	20	—	3	85	10	9	3
90 (5)	93 b 1	Fatty heart	84	18	6	31	102	99	81	71	—	—	26	94	85	53
90 (6)	95 b 1	Dilatation of heart	26	—	9	11	25	29	43	9	—	—	5	9	9	15
90 (8)	95a	Disordered action of heart	30	—	3	15	29	38	38	79	—	3	26	70	95	128
Total of above* ..			1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rate per million living..			777	29	105	269	1402	5292	8856	715	20	101	239	1174	3829	7141
<i>Females.</i>																
87	90	Pericarditis	9	340	70	14	7	5	2	7	300	31	8	7	4	3
88 (1)	91 (1)	Malignant endocarditis ..	29	21	113	108	21	5	2	33	300	119	122	18	9	2
88 (2)	91 (2), 92 (4)†	Other acute endocarditis	16	340	135	61	5	3	1	13	167	98	50	4	2	—
90 (1)	92 (1)	Aortic disease	51	43	5	33	55	53	59	61	—	14	29	59	75	78
90 (2)	92 (2)	Mitral disease	320	86	330	337	312	315	326	336	100	395	385	344	310	314
90 (3)	92 (3)	Aortic and mitral disease	21	21	32	28	20	19	19	32	33	59	37	30	29	30
90 (4)	92 (4)§, (5)	Other endocarditis and valvular disease ..	401	106	299	330	417	428	411	316	—	274	230	319	339	358
88 (3)	93 (a), (c)†	Acute myocarditis	10	43	16	33	5	6	5	18	100	10	72	9	4	7
90 (5)	93 b 1	Fatty heart	86	—	—	34	103	103	89	83	—	—	29	112	108	63
90 (6)	95 b 1	Dilatation of heart	20	—	—	4	17	22	36	6	—	—	2	5	7	11
90 (8)	95a	Disordered action of heart	37	—	—	18	38	40	50	95	—	—	36	93	113	134
Total of above* ..			1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rate per million living..			870	26	113	304	1383	4943	9100	810	21	128	304	1068	3721	6853

* Per mille of deaths comprising the total (viz. from heart disease other than coronary or cardiovascular or myocardial degeneration, or "myocarditis" at ages over 45 or undefined heart disease).

† At ages under 45 for endocarditis or myocarditis not distinguished as acute or chronic.

§ At ages 45 and over for endocarditis not distinguished as acute or chronic.

Another change in the medical terminology of heart disease is reflected in the rise in the standardized death-rate attributed to "*disordered action* of the heart," now separately classified in the International List as group No. 95 (*a*), from 6 per million for each sex in 1919 to 39 for males and 45 for females in 1934. This increase has occurred at every age (Table LXXV), and is doubtless partly at the expense of "heart disease (undefined)" for which the standardized rates have fallen since 1922 from 271 to 73 for males and from 250 to 63 for females, partly derived from "dilatation" which has declined at every age and partly from "valvular disease" unspecified.

The progressive rise since 1920, commented on in previous Reviews, in the standardized mortality assigned to diseases of the coronary arteries and angina pectoris, No. 94, continued in 1933. For males this rate has risen from 32 in 1920 to 248, and for females from 13 to 94, and the degree of relative increase tends to become greater as age advances for females, though not for males. Part of this has been due to the transfer, since mid-1927, of deaths due to atheroma and sclerosis of the coronary arteries from the arterio-sclerosis group, as pointed out in the Review for 1928 (p. 100), but the increase since 1928, more than doubling the rate for each sex in 6 years, represents a real change in the frequency with which death is attributed to coronary disease.

The standardized rates of mortality classed to angina pectoris, cardio-vascular degeneration, arterio-sclerosis, cerebral vascular lesions and abnormalities of blood pressure (almost entirely hyperpiesis) are brought together below for 1922 and years at triennial intervals to 1934.

		Males.					Females.				
		1922.	1925.	1928.	1931.	1934.	1922.	1925.	1928.	1931.	1934.
94.	Coronary disease, angina pectoris	44	55	101	168	248	17	19	35	59	94
93 <i>b</i> (2).	" Cardio-vascular degeneration "	(18)*	(21)*	(34)*	215	255	(16)*	(20)*	(26)*	144	168
97 (3).	Arterio-sclerosis without cerebro-vascular lesion ..	278*	315*	360*	192	170	138*	161*	191*	110	101
97 (1) (2).	Arterio-sclerosis with cerebro-vascular lesion	118	136	221	220	228	78	91	161	165	176
82.	Cerebro - vascular lesions without mention of arterio-sclerosis	624	580	445	436	398	607	554	457	421	397
102.	Abnormalities of blood pressure	—	2	4	4	7	—	1	2	3	6
Total of above		1,082	1,109	1,165	1,235	1,306	856	846	872	902	942

* *Note*.—During 1921–30 cardio-vascular degeneration, sclerosis, atheroma or hypertrophy, or cardio-arterial degeneration were all assigned to a group of deaths from "other or unspecified myocardial disease" (No. 90 (7)), and the numbers of deaths attributed to these causes and included in that group in 1922, 1925 and 1928 were :—

	Males.			Females.		
	1922.	1925.	1928.	1922.	1925.	1928.
Cardio-vascular disease included in group 90 (7)	382	470	847	467	590	839
Per cent of total in that group	6.7	5.1	5.7	6.7	5.5	4.9

By applying these percentages to the standardized death-rates for the group as a whole, the estimated figures in parentheses in the table are obtained.

From 1931 onwards the group entitled cardio-vascular degeneration (No. 93 *b* 2) has included deaths from myocardial degeneration in association with arterio-sclerosis, involving a transfer from No. 97 (3), and these two groups must be considered in conjunction for comparison with earlier years.

The total standardized rate from this group of vascular causes has increased since 1922 for both sexes, but how much of the continued rise can be accounted for by increasing mention of these causes on death certificates in conjunction with bronchitis and other causes is at present difficult to say. The more rapid rise of the male rate than the female, resulting in a 21 per cent. increase since 1928 compared with 10 per cent., suggests that it may be an aftermath of the war, caused by the attaining to ages 50 to 65 of a population not only inferior in average physique owing to elimination of the fittest during 1914-18, but which was subjected during those years to quite abnormal stress.

117. Ulcer of the Stomach and Duodenum.—The number of deaths from these causes was 4,316, 3,241 of males and 1,075 of females. Of the males 33 per cent. and of the females 21 per cent. were classed to ulcer of the duodenum.

The changes in the crude death-rate between 1911 and 1926 were depicted in Diagram 5 of the Review for 1926, p. 97. Standardized mortality of males, which increased from 76 per million in 1911-20 to 130 in 1927, has declined slightly since 1931, to 116, 122 and 123 in 1932, 1933 and 1934. The female rate, which fell from 50 in 1911-20 and remained about 36 during the next decade, has also registered a further decline to 32 in 1933 and 33 in 1934.

When the death-rates per million at various ages in 1932-34 are compared with 1911-20, the increase in male mortality is perceived to have been limited to ages over 35. At 15-25 there has been a fall of 27 per cent. and at 25-35 a decline of 5 per cent., but from 35 onwards the increase becomes absolutely and relatively larger with advancing age.

		0-	15-	25-	35-	45-	55-	65-	75
									and up
Males	{ 1911-20 ..	2	26	73	130	195	243	258	212
	{ 1932-34 ..	1	19	69	173	375	460	500	478
Females	{ 1911-20 ..	3	36	55	84	104	122	126	115
	{ 1932-34 ..	1	6	12	36	86	133	193	231

The percentage change in female mortality risk has been, in successive decennia of age from 15-25 onwards, — 83, — 78, — 57, — 17, +9, +53, and at 75 and over +101.

These changes are indicative of a progressive postponement of death from this cause to later ages, especially amongst females.

The regional distribution of mortality at each decennium of age from 35 to 75 is revealed in Table LXXVI. Whilst male mortality at 35-55 is greatly increased by an urban environment, no effect of urbanization upon the female rates is to be observed at these ages, but at 55-65 the effect appears for each sex. Greater London has the highest rates at ages 45-75 for both sexes except that for females at ages 45-55 Midland I is highest. At 35-45

North I and II for females, and the Northern regions generally for males, have the greatest mortality.

Table LXXVI.—Peptic Ulcer ; Mortality per million living at ages 35–75 in Regions, 1932–34.

	Males.				Females.			
	35–	45–	55–	65–75	35–	45–	55–	65–75
England and Wales	173	375	460	500	36	86	133	193
Greater London	171	468	633	738	33	102	167	273
Remainder of South-East	153	338	465	516	32	80	109	183
North I	193	279	362	454	60	79	117	133
„ II	209	325	350	435	44	61	132	147
„ III	193	416	439	451	31	72	117	202
„ IV	189	404	415	397	34	76	120	148
Midland I	166	365	454	489	41	114	151	208
„ II	169	372	458	461	34	76	147	154
East	163	264	392	389	37	91	115	194
South-West	130	246	364	436	39	91	115	149
Wales I	176	347	340	317	33	56	156	156
„ II	152	307	338	438	34	87	86	198
County Boroughs } outside	203	421	467	459	36	83	140	177
Urban Districts } Greater	171	353	413	476	37	82	125	164
Rural Districts } London	127	235	348	395	38	83	99	179

121. **Appendicitis.**—Deaths numbered 2,985 compared with 3,054 in 1933 and 3,014 in 1932. Standardized mortality, 78 per million males and 58 per million females, has undergone no appreciable change since 1911–20 when the rates were 81 and 58 respectively.

Although the total mortality risk has changed so little, there has been, as for peptic ulcer, considerable modification of the distribution of deaths according to age.

			0–	15–	25–	35–	45–	55–	65–	75 and up
Rates per million living	Males	{ 1911–20	82	115	64	63	75	87	89	84
		{ 1932–34	72	70	55	67	99	152	168	197
	Females	{ 1911–20	66	65	43	45	54	60	69	75
		{ 1932–34	57	43	37	44	84	104	136	130
Rate in 1932–34										
per cent. of 1911–20	Males	..	88	61	86	106	132	175	189	234
	Females	..	86	66	86	98	156	173	197	173

For children under 15 and adults aged 25–35 the risk has declined since 1911–20 by 12 to 14 per cent., and at 15–25 it has fallen by 39 per cent. for males and 34 per cent. for females. This improvement has been balanced by a large increase in mortality rates at later

ages, indicating that a postponement of death from appendicitis to later ages has been in progress during the last 18 years, and this probably arises in the main from a postponed incidence of the disease in a severe form.

The regional distribution at three groups of ages reveals no association with urbanization at ages 5–25, nor at 45–65, but at 25–45 mortality of each sex declines with increasing urbanization (Table LXXVII). Wales I gives the highest rates for males aged 5–45, and the South-East and Midland I at ages 45–65, whilst for females the East and Wales I are first at 5–25, Wales II and I at 25–45 and South-East outside Greater London at 45–65.

Table LXXVII.—Appendicitis : Mortality per million living at ages 5–25, 25–45 and 45–65 in Regions, 1932–34.

	Males.			Females.		
	5–	25–	45–65	5–	25–	45–65
England and Wales	74	60	123	53	41	93
Greater London	66	61	136	52	32	101
Remainder of South-East ..	69	72	143	49	42	109
North I	77	70	95	43	34	76
„ II	80	70	115	56	36	69
„ III	77	64	117	42	46	103
„ IV	80	54	114	62	46	95
Midland I	70	51	142	59	39	86
„ II	71	49	99	41	36	65
East	56	53	115	68	42	98
South-West	74	43	117	48	41	84
Wales I	112	77	100	64	54	89
„ II	81	61	72	49	75	39
County Boroughs } outside ..	77	54	118	50	37	92
Urban Districts } Greater ..	75	62	121	56	44	94
Rural Districts } London ..	76	66	119	56	51	85

140–150. The Puerperal State.—*Deaths and their Classification.* The number of deaths assigned to diseases of pregnancy, childbirth and the puerperal state was 2,748 (Tables 6, 21 and LXXVIII), of which 394 or 14·3 per cent. were assigned to abortion, 242 or 8·8 per cent. to ectopic gestation and other accidents and toxæmias of pregnancy, and the remainder to diseases and accidents of childbirth at full term.

In addition 100 deaths from criminal abortion were assigned to various forms of violence, *e.g.*, suicide, murder, etc., in accordance with the verdicts recorded by the coroners' juries (Tables 25 and LXXVIII), and 747 deaths of pregnant or parturient women who suffered from various non-puerperal diseases (Table LXXIX) were

classified to those diseases. The assignment of deaths, attributed to a non-puerperal cause in association with pregnancy or the puerperal state, to the puerperal group on the one hand or to the non-puerperal cause on the other is carried out in accordance with rules of precedence outlined in the Manual of the International List of Causes of Death.

It should be remembered that the 747 deaths defined by this process as "not classed to pregnancy but returned as associated therewith," or in shorter terminology as "classed to non-puerperal causes," resulted in large part from risks to which the general population of women was exposed and a large proportion of them would have occurred if these women had not been pregnant. Every pregnant woman is exposed to about the same hazards of dying from non-puerperal causes as if she had not been pregnant, and if she does so die the fact of pregnancy or recent parturition is usually mentioned on the death certificate on the grounds that notwithstanding that normal childbearing is a physiological process it is difficult to assert categorically that in the presence of some serious disease it did not, by diminishing the reserves of strength or by some other means, render recovery more difficult. The introduction of the new form of certificate in 1927 undoubtedly resulted in a more complete recording of associated childbearing, since this might in many instances be regarded as "contributing to death but not related to the immediate cause," though neither "primary" nor "secondary" in the terminology of the old form of certificate.

A study of the trend of deaths before and after 1927 leads to the conclusion that about one-fifth of the deaths now classed as associated with childbearing would have escaped recognition as such in the death registers prior to the introduction of the new certificate; and this should be born in mind when comparing recent rates with those prior to 1927.

A detailed discussion of this and many other factors which must be taken into account when comparing statistics of maternal mortality with those of years prior to 1931, or with those of other countries, was included in the Review for 1933, pp. 96-113, to which reference should be made before drawing conclusions from such comparisons.

Table LXXVIII gives in full detail of civil condition, age and cause, the deaths of women registered during 1934 which were classed to pregnancy and childbearing, that is to say to International groups 140-150, and to criminal abortion amongst the violent causes (Nos. 171, 175, 194, 195). The analysis contained in this table and its predecessors was summarized for each year 1924-33 in Table LXXI of the Review for 1933, and reference may be made to that table in order to compare the deaths of married, single or widowed women from specific causes during 1934 with those registered in previous years. The totals of 162 deaths of single women and 25

of widowed women agree closely with the previous 5-year averages, 163 and 25 respectively.

Table LXXIX gives in similar detail of age, and by civil condition for the total, the causes to which the deaths classed as *associated with, though not due to, pregnancy or childbearing* were assigned, those associated with abortion being also distinguished at the foot of the table. The total of 747 consisted of 33 single, 705 married and 9 widowed women, compared with average numbers during 1929-33 of 43, 786 and 7 respectively. The decline from 828 in 1933 is accounted for by influenza associated with childbearing, to which cause 31 were assigned compared with 129. Chronic nephritis accounted for 71 (55 in 1933) and in the case of 21 of these a preference for the puerperal cause as the more important was expressed by the certifying practitioner. In 20 of the 32 deaths classed to acute yellow atrophy, and in 14 of the 83 deaths assigned to lobar pneumonia, preference was expressed for the puerperal cause by the order of statement. Deaths assigned to intestinal obstruction numbered 49 (40 in 1933), including 23 following Cæsarean section, and in the case of 34 of these the puerperal cause was placed first in the order of causation by the certifier.

The effect of the operation of the rules of preference upon the distribution of deaths between Tables LXXVIII and LXXIX was discussed in the Review for 1933, and the conclusion was reached that complete reliance upon the order of statement on the certificate of death rather than upon the rules of selection defined in the Manual of the International List of Causes of Death would not affect the *totals* assigned to puerperal and non-puerperal causes to any appreciable extent, although it would result in considerable transfers between the sub-groups making up the totals. The causes most affected would be puerperal sepsis, on the one hand, and the non-puerperal causes mentioned above, namely intestinal obstruction, acute yellow atrophy, lobar pneumonia and chronic nephritis, on the other, to all of which the rules give an unduly high order of preference.

No national statistics are available of the frequency with which *Cæsarean Section* is resorted to, but the deaths with mention of the operation, whether assigned to puerperal or non-puerperal causes, were increasing until 1931 (Table LXXX). In 1921-23 and succeeding triennia to 1930-32 they averaged 103, 117, 142 and 164 per annum, and in 1933 numbered 170 and in 1934 161.

All deaths classified as caused by or due to *abortion* are brought together in Table LXXXI under the various headings, with corresponding figures for previous years for which the information is available.

It should be noted that abortions resulting from other complications of pregnancy are still classed to Nos. 143, 146, 147 and do not appear under any of the "abortion" headings unless there is some other associated condition causing the death to appear in Table LXXIX.

Table LXXVIII.—Deaths of Women classed to Pregnancy and Childbearing, 1934.

Cause of Death.	All Ages.	Civil Condition.			Ages.						
		Single.	Married.	Widowed.	15-	20-	25-	30-	35-	40-	45 and upwards
141. Post abortive sepsis	295	30	258	7	5	30	79	95	50	32	4
Single	—	30	—	—	3	8	11	8	—	—	—
Married	—	—	258	—	2	22	65	84	49	32	4
Widowed	—	—	—	7	—	—	3	3	1	—	—
Streptococcal infection	11	—	11	—	—	—	—	6	4	1	—
Gas gangrene	1	—	1	—	—	—	1	—	—	—	—
Septic phlegmasia alba dolens, phlebitis and thrombosis.	3	—	2	1	—	1	—	1	—	1	—
Infective endocarditis	2	—	2	—	—	—	—	—	1	1	—
Septic pneumonia	4	—	3	1	—	—	—	2	2	—	—
Septicæmia	151	16	131	4	4	15	39	47	27	18	1
Sepsis	8	1	7	—	—	1	2	3	1	1	—
Septic intoxication, sapræmia	14	—	13	1	—	1	2	5	2	3	1
Pelvic peritonitis	6	1	5	—	—	1	—	4	—	—	1
Peritonitis	42	7	35	—	1	9	16	9	5	2	—
Salpingitis	9	2	7	—	—	—	3	4	1	1	—
Metritis	3	1	2	—	—	—	2	1	—	—	—
Endometritis	15	1	14	—	—	—	5	6	2	1	1
Parametritis	3	—	3	—	—	—	1	1	1	—	—
Erysipelas	2	—	2	—	—	—	—	1	—	1	—
Pyæmia	9	—	9	—	—	1	3	1	3	1	—
Pelvic cellulitis	6	—	6	—	—	—	1	3	1	1	—
Pelvic abscess	1	—	1	—	—	—	—	1	—	—	—
Other specified septic conditions	4	—	4	—	—	1	3	—	—	—	—
“Puerperal fever”	1	1	—	—	—	—	1	—	—	—	—
141. Abortion not returned as septic	99	6	92	1	—	6	21	22	19	26	5
Single	—	6	—	—	—	2	2	1	—	—	1
Married	—	—	92	—	—	4	19	20	19	26	4
Widowed	—	—	—	1	—	—	—	1	—	—	—
(1) Hæmorrhage following abortion.	94	6	87	1	—	6	19	21	18	25	5
Single	—	6	—	—	—	2	2	1	—	—	1
Married	—	—	87	—	—	4	17	19	18	25	4
Widowed	—	—	—	1	—	—	—	1	—	—	—
(2) Without record of hæmorrhage.	5	—	5	—	—	—	2	1	1	1	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	5	—	—	—	2	1	1	1	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
142. Ectopic gestation	88	8	79	1	1	10	15	28	26	7	1
Single	—	8	—	—	—	3	3	1	1	—	—
Married	—	—	79	—	1	7	12	27	24	7	1
Widowed	—	—	—	1	—	—	—	—	1	—	—
143. Other accidents of pregnancy ..	28	2	25	1	—	5	8	5	2	6	2
Single	—	2	—	—	—	1	—	1	—	—	—
Married	—	—	25	—	—	4	8	4	2	5	2
Widowed	—	—	—	1	—	—	—	—	—	1	—
Hydatidiform mole	13	1	11	1	—	4	2	1	—	4	2
Hydramnios	2	—	2	—	—	—	1	—	1	—	—
Retroverted gravid uterus ..	2	—	2	—	—	—	—	2	—	—	—
“Pregnancy” (unqualified) ..	11	1	10	—	—	1	5	2	1	2	—
44. Puerperal hæmorrhage	265	7	256	2	2	22	59	64	67	46	5
Single	—	7	—	—	—	3	2	1	—	1	—
Married	—	—	256	—	2	19	57	63	67	43	5
Widowed	—	—	—	2	—	—	—	—	—	2	—
(a) Placenta prævia	109	1	106	2	—	6	16	31	31	21	4
Single	—	1	—	—	—	—	—	—	—	1	—
Married	—	—	106	—	—	6	16	31	31	18	4
Widowed	—	—	—	2	—	—	—	—	—	2	—
(b) Other puerperal hæmorrhage.	156	6	150	—	2	16	43	33	36	25	1
Single	—	6	—	—	—	3	2	1	—	—	—
Married	—	—	150	—	2	13	41	32	36	25	1
Widowed	—	—	—	—	—	—	—	—	—	—	—
Post partum hæmorrhage	83	3	80	—	1	8	21	15	22	15	1
Adherent or retained placenta.	57	2	55	—	1	8	18	11	12	7	—
Accidental hæmorrhage ..	16	1	15	—	—	—	4	7	2	3	—

Table LXXVIII.—continued.

Cause of Death.	All Ages.	Civil Condition.			Ages.						
		Single.	Married.	Widowed.	15-	20-	25-	30-	35-	40-	45 and up-wards
145. Puerperal sepsis not returned as post-abortive.	917	41	870	6	18	167	281	242	136	65	8
Single	—	41	—	—	7	15	10	3	5	—	—
Married	—	—	870	—	11	151	270	237	131	62	8
Widowed	—	—	—	6	—	1	1	2	—	3	—
(a) Puerperal septicæmia and pyæmia.	917	41	870	6	18	167	281	242	136	65	8
Single	—	41	—	—	7	15	10	3	5	—	—
Married	—	—	870	—	11	151	270	237	131	62	8
Widowed	—	—	—	6	—	1	1	2	—	3	—
Streptococcal infection ..	65	—	63	2	—	12	22	15	10	5	1
Staphylococcal infection ..	1	—	1	—	—	—	1	—	—	—	—
Pneumococcal infection ..	5	—	5	—	—	1	2	—	—	2	—
Bacillus coli infection ..	8	—	8	—	—	1	1	4	1	1	—
Gas gangrene	3	—	3	—	—	—	1	1	—	—	1
Septic phlegmasia alba dolens, phlebitis, thrombosis.	29	3	26	—	1	4	9	1	9	5	—
Septic pneumonia	9	1	8	—	—	2	3	4	—	—	—
Septic endocarditis	5	—	5	—	—	1	1	1	—	2	—
Toxic myocarditis	3	—	3	—	—	—	1	1	1	—	—
Septicæmia	319	14	303	2	3	65	98	84	47	19	3
Sepsis	96	2	94	—	1	17	35	27	9	7	—
Septic intoxication, sap-ræmia.	67	2	65	—	2	8	14	20	16	6	1
Pelvic peritonitis	17	*2	15	—	—	3	5	*7	—	2	—
Peritonitis	93	6	86	1	3	10	33	25	19	3	—
Salpingitis	3	—	3	—	—	—	2	1	—	—	—
Metritis	3	—	3	—	—	—	1	2	—	—	—
Endometritis	44	4	40	—	—	9	7	14	11	3	—
Parametritis	14	—	14	—	1	2	5	6	—	—	—
Perimetritis	1	—	1	—	—	—	—	1	—	—	—
Erysipelas	5	—	5	—	—	3	—	2	—	—	—
Pyæmia	22	1	21	—	—	4	6	6	4	2	—
Pelvic cellulitis	29	2	26	1	3	9	8	6	1	2	—
Pelvic abscess	8	—	8	—	1	—	1	5	1	—	—
Other specified septic conditions.	9	1	8	—	—	4	2	2	—	1	—
“ Puerperal fever ”	59	3	56	—	3	12	23	7	7	5	2
(b) Puerperal tetanus	—	—	—	—	—	—	—	—	—	—	—
146. Puerperal albuminuria and convulsions.	414	27	386	1	21	91	105	91	67	35	4
Single	—	27	—	—	8	8	3	5	1	2	—
Married	—	—	386	—	13	83	102	85	66	33	4
Widowed	—	—	—	1	—	—	—	1	—	—	—
147. Other toxæmias of pregnancy ..	126	11	114	1	5	23	35	26	26	11	—
Single	—	11	—	—	3	6	1	—	—	1	—
Married	—	—	114	—	2	17	34	26	25	10	—
Widowed	—	—	—	1	—	—	—	—	1	—	—
Chorea	2	2	—	—	1	1	—	—	—	—	—
Toxæmia of pregnancy	76	5	70	1	2	15	21	13	17	8	—
Puerperal toxæmia	4	—	4	—	—	—	1	2	1	—	—
Uncontrollable vomiting	44	4	40	—	2	7	13	11	8	3	—
148. Puerperal phlegmasia alba dolens, embolism and sudden death.	158	6	151	1	1	12	42	38	37	27	1
Single	—	6	—	—	1	1	1	1	—	2	—
Married	—	—	151	—	—	11	41	36	37	25	1
Widowed	—	—	—	1	—	—	—	1	—	—	—
(a) Puerperal phlegmasia alba dolens not returned as septic.	50	—	50	—	—	3	12	17	14	4	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	50	—	—	3	12	17	14	4	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(b) Puerperal embolism and sudden death.	108	6	101	1	1	9	30	21	23	23	1
Single	—	6	—	—	1	1	1	1	—	2	—
Married	—	—	101	—	—	8	29	19	23	21	1
Widowed	—	—	—	1	—	—	—	1	—	—	—

* Including 1 divorced woman.

Table LXXVIII.—continued.

Cause of Death.	All Ages.	Civil Condition.			Ages.						
		Single.	Married.	Widowed.	15-	20-	25-	30-	35-	40-	45 and upwards
149. Other accidents of childbirth..	293	21	270	2	8	34	71	74	71	32	3
Single	—	21	—	—	6	1	7	4	3	—	—
Married	—	—	270	—	2	33	64	70	68	30	3
Widowed	—	—	—	2	—	—	—	—	—	2	—
Contracted pelvis	54	5	49	—	—	8	13	17	10	6	—
Craniotomy	1	—	1	—	—	—	—	—	1	—	—
Instrumental delivery	8	—	8	—	—	—	1	3	4	—	—
Malpresentation	29	2	27	—	1	4	7	7	8	2	—
Version	1	1	—	—	—	—	—	1	—	—	—
Abnormal foetus	11	1	10	—	2	1	1	—	5	1	1
Difficult and prolonged labour	89	8	80	1	3	9	24	17	25	9	2
Cæsarean section (reason un-	9	3	6	—	—	1	3	3	2	—	—
stated).†											
Rupture of uterus	24	—	23	1	—	2	1	8	7	6	—
Rupture of vagina	1	—	1	—	—	—	—	—	1	—	—
Laceration of cervix	2	—	2	—	—	—	—	2	—	—	—
Laceration of vagina	1	—	1	—	—	—	—	1	—	—	—
Laceration of perineum	3	—	3	—	—	—	2	1	—	—	—
Inversion of uterus	5	—	5	—	—	2	1	2	—	—	—
Sub-involution of uterus	3	—	3	—	—	—	1	1	—	1	—
Uterine inertia	14	—	14	—	1	2	3	4	4	—	—
Contraction of uterus	5	—	5	—	—	—	3	—	1	1	—
Rigid os uteri	1	—	1	—	—	1	—	—	—	—	—
Rigid cervix uteri	1	—	1	—	—	—	—	—	—	1	—
Adherent and retained placenta	16	—	16	—	—	2	8	2	1	3	—
Precipitate labour	3	1	2	—	1	1	—	—	1	—	—
Stillborn	4	—	4	—	—	—	1	2	—	1	—
Multiple birth	8	—	8	—	—	1	2	3	1	1	—
150. Other or unspecified conditions	65	4	60	1	3	8	22	17	9	6	—
of the puerperal state.											
Single	—	4	—	—	—	1	2	1	—	—	—
Married	—	—	60	—	3	7	20	16	8	6	—
Widowed	—	—	—	1	—	—	—	—	1	—	—
(1) Puerperal insanity	21	2	19	—	—	3	7	7	2	2	—
Single	—	2	—	—	—	1	1	—	—	—	—
Married	—	—	19	—	—	2	6	7	2	2	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(2) Puerperal diseases of the	20	1	19	—	1	3	7	3	3	3	—
breast.											
Single	—	1	—	—	—	—	1	—	—	—	—
Married	—	—	19	—	1	3	6	3	3	3	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(3) Childbirth (unqualified) ..	24	1	22	1	2	2	8	7	4	1	—
Single	—	1	—	—	—	—	—	1	—	—	—
Married	—	—	22	—	2	2	8	6	3	1	—
Widowed	—	—	—	1	—	—	—	—	1	—	—
(with secondary causes as											
follows):—											
Anæmia	5	1	4	—	—	—	1	3	1	—	—
Dilatation of heart	2	—	2	—	—	—	1	1	—	—	—
Myocarditis	1	—	1	—	—	—	—	—	1	—	—
Myocardial degeneration ..	1	—	1	—	—	—	1	—	—	—	—
Auricular fibrillation	1	—	1	—	—	—	1	—	—	—	—
Bronchitis	1	—	1	—	—	—	1	—	—	—	—
Pneumonia	5	—	5	—	1	1	1	—	1	1	—
Broncho pneumonia	1	—	1	—	—	—	—	1	—	—	—
Pleurisy	1	—	—	1	—	—	—	—	1	—	—
Enteritis	1	—	1	—	1	—	—	—	—	—	—
Paresis of bowel	1	—	1	—	—	1	—	—	—	—	—
Suppression of urine	1	—	1	—	—	—	1	—	—	—	—
Without stated secondary	3	—	3	—	—	—	1	2	—	—	—
cause.											
Total	2,748	*163	2,561	24	64	408	738	702	510	293	33
Single	—	*163	—	—	28	49	42	27*	10	6	1
Married	—	—	2,561	—	36	358	692	668	496	279	32
Widowed	—	—	—	24	—	1	4	7	4	8	—
Criminal abortion (see Table 25)	100	29	64	7	5	16	30	27	17	3	2
Single	—	29	—	—	4	10	8	6	1	—	—
Married	—	—	64	—	1	6	22	16	15	2	2
Widowed	—	—	—	7	—	—	—	5	1	1	—

* Including 1 divorced woman.

† In addition, Cæsarean section was stated to have been performed in the cases of 97 deaths included under other headings in this table—ante partum hæmorrhage 1, placenta prævia 6, accidental hæmorrhage 3, puerperal albuminuria and convulsions 16, toxæmia of pregnancy 4, contracted pelvis 33, malpresentation 9, abnormal foetus 2, difficult and prolonged labour 18, ruptured uterus 1, uterine inertia 1, contraction ring 1, rigid os uteri 1, twin pregnancy 1.

Table LXXIX.—Deaths of Women not classed to Pregnancy and Childbearing, but returned as associated therewith, 1934.

Cause of Death.		All Ages.	Ages.						
			15—	20—	25—	30—	35—	40—	45 and upwards.
7	Measles	1	—	—	1	—	—	—	—
8	Scarlet Fever	9	—	1	2	1	5	—	—
11	Influenza	31	2	3	9	9	3	5	—
15	Erysipelas	1	—	—	—	—	1	—	—
17	Encephalitis lethargica.. .. .	1	—	—	—	1	—	—	—
18	Cerebro-spinal fever	1	—	—	—	1	—	—	—
23	Tuberculosis of respiratory system	59	2	19	17	9	11	1	—
24–32	Other forms of tuberculosis	18	4	4	4	3	3	—	—
34	Syphilis	2	—	—	—	2	—	—	—
35 (2)	Gonorrhœa	1	—	—	—	1	—	—	—
36 (a)	Septicæmia	3	—	1	—	—	1	1	—
45–53	Cancer	13	—	—	1	7	4	—	1
54 (a)	Tumours of female genital organs	23	—	2	—	11	5	4	1
54 (b) & 55 (b)	Tumours of other sites.. .. .	4	—	—	2	—	1	—	1
56	Rheumatic fever	8	—	1	3	2	2	—	—
57 (2)	Rheumatoid arthritis	1	—	—	—	—	—	1	—
59	Diabetes	7	—	1	2	2	1	1	—
65 (2)	Hypopituitarism	1	—	—	—	—	1	—	—
66 (a)	Adenoma of thyroid gland	1	—	—	1	—	—	—	—
66 (b)	Exophthalmic goitre	12	1	—	4	3	3	—	1
70 (b)	Hæmophilia	1	—	—	—	—	—	1	—
71 (a)	Pernicious anæmia	14	—	2	2	5	4	1	—
71 (b) (1)	Splenic anæmia	1	—	—	—	—	1	—	—
72 (a)	Lymphatic leukæmia	1	—	—	1	—	—	—	—
79	Pneumococcal meningitis	1	—	1	—	—	—	—	—
82 (a)	Cerebral hæmorrhage	1	—	—	—	—	1	—	—
82 (b) (2)	Cerebral thrombosis	1	—	—	—	—	—	1	—
84 (b)	Psychosis	1	—	1	—	—	—	—	—
85	Epilepsy	4	1	—	1	1	1	—	—
87 (b)	Polyneuritis	1	—	1	—	—	—	—	—
89 (b)	Mastoiditis	1	—	—	—	—	1	—	—
91 (1)	Malignant endocarditis.. .. .	12	1	4	1	3	2	1	—
91 (2)	Other acute endocarditis	3	—	1	—	1	1	—	—
92 (2)	Mitral valve disease	68	3	15	16	13	12	7	2
92 (1, 3, 4, 5)	Other or unspecified valvular disease	45	—	7	15	8	10	5	—
93 (a)	Acute myocarditis	2	—	—	1	—	1	—	—
93 (b) (1)	Fatty heart	9	—	—	2	—	5	2	—
93 (b) (3), 93 (c)	Other or unspecified myocardial disease	31	—	2	3	6	9	9	2
94	Coronary embolism	1	—	—	—	—	—	1	—
95	Other diseases of the heart	13	—	2	3	4	1	3	—
99	Other diseases of the arteries	3	—	—	1	—	2	—	—
100 (1)	Varix	4	—	—	—	—	3	1	—
100 (2)	Other diseases of the veins	6	—	—	—	3	2	1	—
106	Bronchitis	6	—	—	—	3	3	—	—
107	Broncho-pneumonia	18	1	1	8	3	3	2	—
108	Lobar pneumonia	83	4	7	19	26	20	7	—
109	Pneumonia (not otherwise defined).. .. .	10	—	—	3	3	3	1	—

Table LXXIX.—*continued.*

Cause of Death.	All Ages.	Ages.						
		15-	20-	25-	30-	35-	40-	45 and up-wards.
110 (1) Empyema	2	—	—	—	1	1	—	—
111 (2) Pulmonary embolism ..	2	—	—	1	—	1	—	—
112 Asthma	2	—	—	—	—	1	1	—
114 (b) (1) Gangrene of lung ..	1	—	—	—	—	1	—	—
115 (1) Diseases of the teeth and gums	5	—	1	—	1	2	1	—
115 (3) Diseases of the tonsils ..	6	—	1	3	—	2	—	—
115 (4) Streptococcal pharyngitis ..	2	—	—	—	—	2	—	—
117 (a) Ulcer of stomach	2	—	—	1	—	1	—	—
119 & 120 (a) Diarrhœa and enteritis..	4	—	—	1	1	2	—	—
119 & 120 (b) Ulceration of intestines	2	—	1	—	1	—	—	—
121 Appendicitis	9	—	1	5	3	—	—	—
122 (b) Intestinal obstruction.. ..	49	2	3	14	14	12	2	2
125 (1) Acute yellow atrophy.. ..	32	1	4	10	6	8	3	—
125 (2) Other diseases of liver ..	2	—	1	1	—	—	—	—
126 (1) Cholethisasis with cholecystitis	1	—	—	—	1	—	—	—
127 (1) Cholecystitis without record of biliary calculi	1	—	—	—	—	1	—	—
129 Peritonitis without stated cause	2	—	—	1	—	1	—	—
131 Chronic nephritis	71	1	7	11	22	15	14	1
133 (a) Pyonephrosis	1	—	—	1	—	—	—	—
133 (b) Polycystic kidneys	1	—	1	—	—	—	—	—
134 (a) Renal calculi	1	—	—	—	—	1	—	—
135 (a) Cystitis	1	—	—	—	—	1	—	—
157 (c) Congenital malformation of heart	2	—	1	1	—	—	—	—
163-198 Violence	8	—	1	2	3	1	1	—
Total	747*	23	98	174	184	179	78	11
Single	33	8	3	9	3	5	5	—
Married	705	15	95	164	180	169	71	11
Widowed	9	—	—	1	1	5	2	—
Associated with abortion (included above)	64	2	6	17	16	15	8	—
Single	—	—	—	—	—	—	—	—
Married	64	2	6	17	16	15	8	—
Widowed	—	—	—	—	—	—	—	—

* Of these 747 deaths, 218 were stated to be associated with pregnancy, 64 with abortion, 46 with premature delivery, 17 with delivery at full term, and 402 with childbirth. Cæsarean section was stated to have been performed in the case of 55 of these deaths, of which 21 were attributed to ileus following Cæsarean section and assigned to No. 122 (b) above.

Such abortions, which are secondary to a toxæmia or some other morbid condition of pregnancy, even if they could all be ascertained by special inquiry, are in a class by themselves and there would seem to be little justification for adding them to Table LXXXI.

Deaths known to have resulted from criminal abortion numbered 100, including 29 single women. This is the highest number yet recorded, the average in the preceding 5 years being 73, including 20 single women. Post-abortive sepsis had 295 deaths, the highest

number save in 1930, the average in 1929–33 being 257. The increase was entirely amongst the married, 258 of the deaths being those of married women compared with an average of 221 in 1929–33. These post-abortive sepsis deaths comprised 24·3 per cent. of the total assigned to puerperal sepsis, compared with an average of 23·4 in the preceding 5 years.

Table LXXX.—Deaths with Mention of Cæsarean Section, 1921–1934.

Assigned to Puerperal Causes.							Assigned to non-puerperal causes.			Total with mention of Cæsarean Section.
	Placenta prævia.	Con-tracted pelvis.	Albumin-uria, etc.	Other specified.	Reason not stated.	Total.	Intes-tinal Obstruc-tion.	Other Causes.	Total.	
1921 ..	4	19	3	13	50	89	5	18	23	112
1922 ..	5	9	9	25	20	68	7	13	20	88
1923 ..	1	8	8	35	33	85	5	18	23	108
1924 ..	7	39	6	32	4	88	11	13	24	112
1925 ..	9	31	8	32	10	90	11	18	29	119
1926 ..	6	40	16	30	5	97	10	12	22	119
1927 ..	5	24	10	56	2	97	8	23	31	128
1928 ..	9	40	16	46	2	113	11	24	35	148
1929 ..	15	55	9	17	8	104	11	35	46	150
1930 ..	11	43	8	25	5	92	23	27	50	142
1931 ..	14	54	16	41	10	135	16	32	48	183
1932 ..	13	46	10	38	9	116	22	30	52	168
1933 ..	10	51	9	39	16	125	21	24	45	170
1934 ..	6	33	16	42	9	106	23	32	55	161

Table LXXXI.—Deaths attributed to, or associated with, Abortion, 1926–34.

Old List No.	New List No.		1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.
Part of 146	140	Post-abortive sepsis ..	222	215	224	238	300	229	262	257	295
	141	Abortion not returned as septic :—									
Part of 143c		(1) Hæmorrhage follow- ing abortion.	72	72	47	51	59	97	105	108	94
143a		(2) Without record of hæmorrhage.	86	82	77	67	65	21	12	13	5
199, 202	VI (Table 25).	Criminal abortion (inquest cases).	51	47	57	67	67	79	69	85	100
		Total attributed to abortion.	431	416	405	423	491	426	448	463	494
		Associated with abortion but not classed to it.	?	?	83	182*	77	77	90	97	64
		Total attributed to, and associated with, abortion.	?	?	488	605	568	503	538	560	558

* The excessive number of deaths associated with abortion but not classed to it in 1929 was partly due to the influenza epidemic of that year and partly to the allocation to abortion rather than to childbirth for that year only of 63 deaths said to be associated with premature delivery without definition as to length of gestation.

Many medical certificates contain no statement as to whether the sepsis followed abortion or delivery at term, and it was ascertained by a sample inquiry in 1932 that about 4 per cent. of such deaths were post-abortive sepsis. There were in 1934 563 sepsis deaths having no statement as to duration of pregnancy, compared with 637, 670, 537, 512, 515 in the five years 1929 to 1933, and the

post-abortive sepsis totals should therefore be increased by addition of 4 per cent. of these numbers. The effect of this correction upon the mortality rates from abortion and from puerperal causes excluding abortion in each year since 1929 is noted below Table LXXXIII.

To non-septic abortion 99 deaths were assigned, a smaller number than in any year for which records are available, the average for 1929-33 being 120. Deaths known to have been associated with abortion also fell to 64, from 97 in 1933.

Rates of Mortality.—Maternal mortality rates should properly be based upon the number of pregnancies, but this number cannot be ascertained owing to the absence of statistics of abortions and of multiple births. It is, therefore, necessary to choose between some approximation to this number, such as the registered annual births, and the total living population of women of the specified class whether pregnant or not. In the Reviews for years 1921-30, crude death rates per million women of all ages were shown in

Table LXXXII.—Mortality of Women in or associated with Childbirth per Thousand Children born alive, 1891-1934.

Year.	Classification in use from 1911 onwards.				Classification in use before 1911.				Total Mortality from or associated with pregnancy or childbirth
	Puerperal Sepsis.	Other Puerperal causes.	Total Puerperal Mortality.	* Non-puerperal causes.	Puerperal Sepsis.	Other Puerperal causes.	Total Puerperal Mortality.	† Non-puerperal causes.	
1891-95	—	—	—	—	2.60	2.89	5.49	—	—
1896-1900	—	—	—	—	2.12	2.57	4.69	—	—
1901-05	—	—	—	—	1.95	2.32	4.27	1.29	5.56
1906-10	—	—	—	—	1.56	2.18	3.74	1.26	5.00
1911-15	1.42	2.61	4.03	0.99	1.50	2.31	3.81	1.21	5.02
1916-20	1.51	2.61	4.12	1.68	1.59	2.29	3.88	1.92	5.80
1921-25	1.40	2.50	3.90	1.14	1.48	2.21	3.69	1.35	5.04
1926-30	1.73	2.54	4.27	1.24	1.78	2.23	4.01	1.50	5.51
1911 ..	1.43	2.44	3.87	1.04	1.52	2.15	3.67	1.24	4.91
1912 ..	1.39	2.59	3.98	0.97	1.47	2.31	3.78	1.17	4.95
1913 ..	1.26	2.70	3.96	0.91	1.34	2.37	3.71	1.16	4.87
1914 ..	1.55	2.62	4.17	0.95	1.63	2.32	3.95	1.17	5.12
1915 ..	1.47	2.71	4.18	1.09	1.56	2.38	3.94	1.38	5.27
1916 ..	1.38	2.74	4.12	0.94	1.47	2.40	3.87	1.19	5.06
1917 ..	1.31	2.58	3.89	0.95	1.39	2.27	3.66	1.18	4.84
1918 ..	1.28	2.51	3.79	3.81	1.35	2.20	3.55	4.05	7.60
1919 ..	1.67	2.70	4.37	1.93	1.76	2.36	4.12	2.18	6.30
1920 ..	1.81	2.52	4.33	1.13	1.87	2.25	4.12	1.34	5.46
1921 ..	1.38	2.54	3.92	1.08	1.46	2.25	3.71	1.29	5.00
1922 ..	1.39	2.44	3.81	1.35	1.46	2.12	3.58	1.58	5.16
1923 ..	1.30	2.52	3.82	1.00	1.38	2.22	3.60	1.22	4.82
1924 ..	1.39	2.51	3.90	1.16	1.48	2.22	3.70	1.36	5.06
1925 ..	1.56	2.52	4.08	1.07	1.62	2.24	3.86	1.29	5.15
1926 ..	1.60	2.52	4.12	1.02	1.64	2.23	3.87	1.27	5.14
1927 ..	1.57	2.54	4.11	1.32	1.63	2.20	3.83	1.60	5.43
1928 ..	1.79	2.63	4.42	1.20	1.85	2.30	4.15	1.47	5.62
1929 ..	1.80	2.53	4.33	1.49	1.83	2.24	4.07	1.75	5.82
1930 ..	1.92	2.48	4.40	1.19	1.96	2.19	4.16	1.43	5.59
1931 ..	1.66	2.45	4.11	1.44	1.71	2.22	3.93	1.62	5.55
1932 ..	1.61	2.60	4.21	1.16	1.68	2.33	4.01	1.36	5.37
1933 ..	1.83	2.68	4.51	1.43	1.90	2.42	4.32	1.62	5.94
1934 ..	2.03	2.57	4.60	1.25	2.10	2.30	4.39	1.45	5.85

* 747 deaths in 1934 (Table LXXIX).

† 747 deaths in Table LXXIX, and 122 from puerperal nephritis and albuminuria in 1934.

Table 5 for each puerperal cause, but from 1931 rates based upon the total births registered in each year have been substituted (Table 7). Rates of mortality from combined puerperal causes per 1,000 live births have been given in the text of the Reports since 1902, and in Table LXXXII such rates are given from 1891–95 according to the classification in use prior to 1911, and from 1911 onwards according to both the old and revised systems.

The changes in the classification of causes in 1911 involved certain transfers of puerperal mastitis, phlegmasia alba dolens and nephritis deaths, which necessitate tabulation of the dual series of rates for comparison with earlier years.

Reliable statistics of stillbirths have been available since 1928, and as the total births, *i.e.*, live and still births, provide a closer approximation to the number of women exposed to the risk of dying from puerperal conditions than do live births alone, maternal mortality rates have been calculated since that year on both bases, and will continue to be so calculated for a sufficient period to enable statistical continuity to be assured. It will be observed from Table LXXXIII that while the rates on the wider basis are naturally lower than those based on live births the relative changes from year to year remain practically unchanged.

Table LXXXIII.—Mortality of Women in or associated with child-birth, 1928–34.

		1928.	1929.	1930.	1931.	1932.	1933.	1934.
Per 1,000 Live Births.	Puerperal sepsis	1.79	1.80	1.92	1.66	1.61	1.83	2.03
	Other puerperal causes	2.63	2.53	2.48	2.45	2.60	2.68	2.57
	Total puerperal mortality	4.42	4.33	4.40	4.11	4.21	4.51	4.60
	Non-puerperal causes†	1.20	1.49	1.19	1.44	1.16	1.43	1.25
Per 1,000 Live and Still-births.	Puerperal sepsis	1.72	1.73	1.84	1.59	1.55	1.75	1.95
	Other puerperal causes	2.52	2.43	2.38	2.35	2.49	2.57	2.47
	Total puerperal mortality	4.25	4.16	4.22	3.95	4.04	4.32	4.41
	Non-puerperal causes†	1.15	1.43	1.14	1.38	1.11	1.37	1.20
	Puerperal causes other than abortion	3.74	3.63	3.59	3.42	3.45	3.70	3.78
	Non-puerperal causes, excluding deaths associated with abortion.	1.03	1.25	1.03	1.27	0.97	1.21	1.10
Per 1,000,000 women aged 15–45.	Abortion (including criminal) ..	42	43*	50*	43*	46*	47*	51*
	Non-puerperal causes associated with abortion.	9	12§	8	8	9	10	7

NOTE.—Criminal abortion deaths are not included in any of the above rates except where specified.

† Associated with pregnancy or child-bearing.

* If corrected for puerperal sepsis deaths having no statement as to duration of pregnancy (see text) the estimated rates for 1929 to 1934 are raised to 46, 53, 46, 47, 50 and 53, and the residual rates in the line above are decreased by about 0.04 per 1,000.

§ Corrected in accordance with the note below Table LXXXI.

For a discussion of the relative advantages of, and fallacies inherent in, the different rates used as measures of mortality risk in childbearing, reference should be made to the Review for 1933, pp. 113–116.

Table LXXXII shows that the annual rate of total puerperal mortality (which excludes criminal abortion) ranged from 3.87 to 4.37 per 1,000 live-born children during 1911–20; and from

3·81 to 4·42 in the next decade. The years 1928–30 were characterized by higher rates for puerperal sepsis than had been recorded for many years, save in 1920, and the total rate in consequence averaged 4·38 in that period, but in 1931 it fell to 4·11 and has increased year by year since to 4·60 in 1934. The apparent increase of recent years has probably exceeded the actual owing to a more complete statement of mention of pregnancy or childbirth on death certificates resulting from the increased attention being paid to the statistics of maternal mortality.

Mortality classed to non-puerperal causes associated with childbearing ranged from 0·91 to 1·09 during 1911–17, was very high owing to influenza in the years 1918–19, and was again enhanced from the same cause in 1922, 1927 and 1929. During the four years 1923–26 before introduction of the new death certificate the rate averaged 1·06, and in 1930–34 it has averaged 1·29, but as already pointed out an increase of about one-fifth in this rate has probably resulted from the fuller information invited by the new certificate.

Table LXXXIII summarizes the mortality rates in each year since 1928, based upon each 1,000 live births or alternatively upon each 1,000 live and still-births, whilst for deaths resulting from or associated with abortion rates per million women aged 15–45 are also given. When abortion deaths are excluded the rate from other puerperal causes (Nos. 142–150) per 1,000 live and still-births is seen to have declined year by year from 3·74 in 1928 to 3·42 in 1931 and increased again in more recent years to 3·78 in 1934. The residual rate for non-puerperal causes excluding deaths associated with abortion has merely fluctuated according to influenza prevalence between 1·03 and 1·27.

Deaths from abortion, including criminal cases, per million women aged 15–45, reached 51 in 1934 (or, if corrected for the puerperal sepsis deaths having no statement as to duration of pregnancy, 53 per million), the highest rate in the period for which this figure can be ascertained. The combined mortality rate due to and associated with abortion, thus based upon the number of women at risk, has fluctuated between 51 and 58, but without any consistent trend, since 1928, the successive annual rates being 51, 55, 58, 51, 55, 57 and 58.

Table LXXXIV compares the mortality per 100,000 live births in 1934 with that in 1926–30, 1931, 1932 and 1933 from the constituent headings of the group of puerperal causes other than abortion, and where possible, with that in 1911–20. Placenta prævia, phlegmasia alba dolens and “other accidents of childbirth” registered a fall in 1934. The combined rate for albuminuria and the “other toxæmias,” shows little change from the mean rates during 1926–30. Puerperal sepsis not returned as abortion registered 153 per 100,000 live births compared with 137 in 1926–30 and 129 in 1931–33.

Table LXXXIV.—Puerperal Mortality from various Causes, per 100,000 Live births, 1911–20, 1926–30, 1931, 1932, 1933, and 1934.

List No.		1911–20	1926–30.	1931.	1932.	1933.	1934.
142	Ectopic gestation	9	13	12	14	16	15
143	Other accidents of pregnancy ..	?	3	4	3	4	5
144a	Placenta prævia	} 55 {	24	22	25	24	18
b	Other puerperal hæmorrhage ..		26	24	22	23	26
146	Puerperal albuminuria & convulsions	79	79	59	61	64	69
147	Other toxæmias of pregnancy ..	?	8	21	25	24	21
148	Puerperal phlegmasia alba dolens, embolism and sudden death	37	29	29	32	30	26
149	Other accidents of childbirth ..	?	41	47	47	54	49
150(1)	Puerperal insanity	4	3	2	4	2	4
(2)	Puerperal diseases of breast.. ..	1	1	2	2	3	3
(3)	Childbirth (unqualified)	?	6	4	6	5	4
	Total non-septic causes other than abortion.	246	234	227	241	247	240
145	Puerperal sepsis not returned as abortion.	?	137	130	119	139	153

Mortality rates from each cause at three ages of the mother, based upon the estimated numbers of live and still-births at those ages calculated from Census data, were given in Table LXXV of the Review for 1933 relating to each year 1924–33. The total rates excluding abortion are estimated on a like basis for 1934 to be 290 per 100,000 live and still-births at ages 15–25, 354 at 25–35 and 527 at 35–55, the increase over 1933 being confined to ages 25–35.

Table LXXXV gives similar rates at the three ages for causes other than abortion in married women based upon estimated legitimate births, and for abortion in married and single women based upon the respective estimated populations. Puerperal hæmorrhage and phlegmasia alba dolens rates in the married are lower than in 1930–32, but the combined rates for the toxæmias (146, 147) and the puerperal sepsis rates have increased at each age.

Criminal abortion deaths tend to increase at each age, but the total mortality from abortion per million living was lower in 1934 than in the preceding years at ages 15–25 and 35–45, but higher at 25–35, in married and single alike.

The specific age rates for the abortion and other than abortion components of puerperal sepsis cannot be calculated separately prior to 1931, but the combined rates for both forms of puerperal sepsis per 100,000 total births at the stated age have been as follows in the eleven years 1924 to 1934.

	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934
All ages	134	150	154	151	172	173	184	159	155	175	195
15–25 ..	110	133	131	118	139	146	139	141	119	139	148
25–35 ..	122	136	146	141	160	167	179	150	151	163	202
35–45 ..	182	190	193	201	238	216	242	207	198	246	220

Table LXXXV.—Mortality of Married Women at Separate ages from Various Puerperal Causes other than Abortion (per 100,000 Births—live and still); and of Married and Single Women from Abortion (per 1,000,000 living), 1930–32, 1933 and 1934.

List No.		Deaths of Married Women per 100,000 Legitimate Live and Still Births.			
		All ages.	15–25.	25–35.	35–45.
142–150	Diseases of pregnancy, childbirth, etc., excluding abortion	{ 1930–32 343 1933 .. 363 1934 .. 371	{ 255 291 290	{ 318 325 344	{ 482 519 506
142	Ectopic gestation	{ 1930–32 12 1933 .. 14 1934 .. 13	{ 2 3 6	{ 11 15 11	{ 22 22 24
143	Other accidents of pregnancy (not abortion)	{ 1930–32 3 1933 .. 3 1934 .. 4	{ 2 5 3	{ 2 2 4	{ 5 2 5
144	Puerperal hæmorrhage	{ 1930–32 47 1933 .. 45 1934 .. 43	{ 21 19 17	{ 39 39 35	{ 89 84 86
145	Puerperal sepsis not returned as post abortive	{ 1930–32 124 1933 .. 131 1934 .. 146	{ 109 112 128	{ 121 125 149	{ 143 161 150
146	Puerperal albuminuria and convulsions ..	{ 1930–32 56 1933 .. 60 1934 .. 65	{ 54 61 76	{ 48 51 55	{ 74 79 77
147	Other toxæmias of pregnancy	{ 1930–32 20 1933 .. 21 1934 .. 19	{ 17 27 15	{ 19 16 18	{ 25 28 27
148	Puerperal phlegmasia alba dolens, embolism and sudden death	{ 1930–32 29 1933 .. 29 1934 .. 25	{ 16 16 9	{ 27 23 23	{ 49 57 48
149	Other accidents of childbirth	{ 1930–32 42 1933 .. 50 1934 .. 45	{ 27 39 28	{ 40 46 39	{ 59 72 76
150	Other or unspecified conditions of the puerperal state (not abortion)	{ 1930–32 10 1933 .. 10 1934 .. 10	{ 6 7 8	{ 10 8 11	{ 16 15 11
	Deaths assigned to other causes but associated with Nos. 142–150	{ 1933 .. 118 1934 .. 108	{ 75 81	{ 103 91	{ 189 169

		Deaths of Married Women per Million living at ages			Deaths of Single Women per Million living.		
		15–25.	25–35.	35–45.	15–25.	25–35.	35–45.
140	Post-abortive sepsis	{ 1930–32 55 1933 .. 46 1934 .. 50	{ 53 49 65	{ 36 38 35	{ 7 4	{ 6 17	{ 7 —
141	Abortion not returned as septic	{ 1930–32 10 1933 .. 14 1934 .. 8*	{ 22 18 17	{ 25 26 19	{ 1* 1*	{ 4* 3*	{ 2* —
—	Criminal abortion	{ 1930–32 12 1933 .. 17 1934 .. 15	{ 14 13 17	{ 5 6 7	{ 4 5	{ 11 12	{ — 2*
—	Total of above	{ 1930–32 77 1933 .. 77 1934 .. 73	{ 89 79 99	{ 66 70 62	{ 12 10	{ 20 32	{ 9 2*
—	Deaths assigned to other causes but associated with No. 140–141	{ 1933 .. 17 1934 .. 17	{ 21 14	{ 15 10	{ — —	{ 4* —	{ 2* —

* These rates are based upon less than 5 deaths.

Regional distribution.—Deaths from abortion other than criminal, and from the residual groups of septic and other causes excluding abortion, were distributed amongst the different types of area as follows :—

	England & Wales.	Greater London.	County Boroughs.*	Other urban districts.*	Rural districts.*
140. Post-abortive sepsis	295	68	117	76	34
141. Abortion, not septic	99	3	34	41	21
145. Puerperal sepsis not returned as abor- tion	917	112	287	296	222
142-4, 146-50. Other causes	1,437	187	471	489	290

(* Outside Greater London.)

In the county boroughs as a whole there occurred one abortion death to every 5 other deaths classed to childbearing, and the county boroughs having more than 2 abortion deaths and for which this ratio exceeded 1 to 4 have been printed in italics in the list which follows.

The 155 abortion deaths in the county boroughs (including those within the boundary of Greater London) were thus located :—*Barnsley 1, Birkenhead 5, Birmingham 11, Blackburn 1, Blackpool 1, Bolton 1, Bootle 3, Bournemouth 1, Bristol 3, Burnley 3, Bury 2, Chester 2, Coventry 4, Croydon 2, Derby 3, Doncaster 1, East Ham 1, Gateshead 3, Gloucester 1, Grimsby 1, Halifax 1, Ipswich 1, Kingston-upon-Hull 7, Leeds 2, Leicester 3, Liverpool 10, Manchester 8, Middlesbrough 4, Newcastle-on-Tyne 1, Norwich 1, Nottingham 2, Oldham 4, Oxford 1, Plymouth 6, Portsmouth 4, Preston 1, Rotherham 1, St. Helens 1, Salford 4, Sheffield 15, Southampton 2, Southport 1, Stockport 1, Stoke-on-Trent 6, Sunderland 3, Wakefield 2, Wallasey 1, West Ham 1, West Hartlepool 1, Wigan 1, Wolverhampton 2, Worcester 1, Cardiff 4, Merthyr-Tydfil 1, Swansea 1.*

Table LXXXVI gives an analysis of deaths of married and other women classed to abortion (excluding criminal) during 1926-30 according to age and type of area, and of married women according to regions as then defined. The death rates of married women per million living, from this cause, were maximal at 35-40 in London and rural areas, at 30-35 in the large towns and at 25-30 in the small towns. Rates were lower in the rural districts than the county boroughs at each age from 20 to 45 and were highest in London at 20-25 and 30-45. The North gave rates above those of England and Wales at each age whilst the rates in Wales were still higher.

The deaths in the county boroughs in 1934 from causes other than abortion (Nos. 142-150), and, in parentheses, the calculated numbers derived by applying the rate in all county boroughs (3.75 per 1,000) to the number of live births in the town in question, were as follows :—*Barnsley 4 (5), Barrow-in-Furness 11 (3), Bath 1 (3),*

Table LXXXVI.—Deaths classed to Abortion, 1926–30, by Age, Civil Condition, Class of Area and Region, and Death rates of Married Women per Million.

	No. of deaths registered.								Death rates per million living.				
	15–	20–	25–	30	35–	40–	45–	All Ages.	20–	25–	30–	35–	40–44
<i>Married Women.</i>													
England and Wales ..	7	150	397	510	498	255	33	1,850	65	80	89	88	48
London A.C. ..	1	24	50	70	73	36	3	257	88	89	112	120	63
County Boroughs ..	2	54	163	203	186	90	15	713	68	97	104	97	50
Other Urban Districts ..	1	50	143	164	151	77	8	594	62	81	79	74	40
Rural Districts..	3	22	41	73	88	52	7	286	51	45	67	81	50
North	3	56	167	212	191	96	14	739	72	102	110	101	54
Midlands	1	35	110	135	133	78	9	501	} 56	66	73	77	42
South (inc. London) ..	3	41	87	116	129	58	6	440					
Wales	—	18	33	47	45	23	4	170	113	104	127	122	68
<i>Single, Widowed and Divorced.</i>													
England and Wales ..	35	97	67	51	44	22	—	316	—	—	—	—	—
London A.C. ..	3	21	17	7	4	4	—	56	—	—	—	—	—
County Boroughs ..	15	34	24	20	18	10	—	121	—	—	—	—	—
Other Urban Districts ..	10	26	15	15	16	3	—	85	—	—	—	—	—
Rural Districts..	7	16	11	9	6	5	—	54	—	—	—	—	—

Birkenhead 8 (9), Birmingham 42 (59), Blackburn 6 (5), Blackpool 5 (5), Bolton 6 (8), Bootle 2 (6), Bournemouth 8 (5), Bradford 23 (15), Brighton 4 (7), Bristol 22 (21), Burnley 14 (4), Burton-on-Trent 1 (3), Bury 6 (3), Canterbury 0 (1), Carlisle 0 (3), Chester 3 (3), Coventry 3 (9), Croydon 9 (12), Darlington 5 (4), Derby 8 (8), Dewsbury 3 (3), Doncaster 2 (4), Dudley 3 (4), Eastbourne 5 (2), East Ham 2 (7), Exeter 3 (4), Gateshead 11 (9), Gloucester 1 (3), Great Yarmouth 2 (3), Grimsby 5 (6), Halifax 8 (4), Hastings 3 (3), Huddersfield 15 (5), Ipswich 4 (5), Kingson-upon Hull 23 (22), Leeds 32 (27), Leicester 11 (13), Lincoln 3 (3), Liverpool 41 (66), Manchester 40 (43), Middlesbrough 6 (10), Newcastle-on-Tyne 26 (18), Northampton 7 (4), Norwich 10 (7), Nottingham 9 (16), Oldham 10 (6), Oxford 3 (4), Plymouth 7 (12), Portsmouth 15 (15), Preston 19 (6), Reading 4 (5), Rochdale 7 (4), Rotherham 8 (5), St. Helens 10 (8), Salford 15 (12), Sheffield 29 (28), Smethwick 7 (5), Southampton 9 (10), Southend 6 (6), Southport 2 (3), South Shields 7 (8), Stockport 6 (7), Stoke-on-Trent 17 (17), Sunderland 18 (14), Tynemouth 5 (5), Wakefield 7 (3), Wallasey 4 (5), Walsall 3 (7), Warrington 5 (5), West Bromwich 7 (6), West Ham 8 (16), West Hartlepool 7 (5), Wigan 5 (5), Wolverhampton 7 (8), Worcester 3 (3), York 6 (5), Cardiff 23 (13), Merthyr Tydfil 1 (4), Newport 5 (6), Swansea 16 (10).

Social Class.—A separation of the live births to married women into groups according to the social grade in which the occupation of the husband was placed for statistical purposes was carried out in the Census year 1931, and a similar classification was made of the deaths from childbearing during 1930–32. Class I, being a small group comprising only 10,974 births, has been combined with

Class II for the purposes of Table LXXXVII and the small number of wives of men without any stated occupation have been omitted.

The resulting rates per 1,000 live births for each social class indicate that the risk attaching to childbearing tends to decline in passing from Class I–II to Class V, though it appears to be somewhat higher in Class IV than III. The risk to married women in Classes IV and V combined is 4·02 per 1,000 live births or slightly less than for all classes, whereas for Classes I and II combined it is considerably above average.

Table LXXXVII.—Mortality per 1,000 Live Births from Pregnancy, Childbirth and the Puerperal State, of Married Women according to Social Class of Husband, 1930–32.

Class.	All causes (140–150).	Other than abortion (142–150).	Ectopic gestation, accidents of pregnancy (142, 143)	Puerperal hæmorrhage. (144).	Puerperal sepsis (145).	Albumin- uria, toxæmias (146, 147)	Phlegm- asia alba dolens (148).	Other Accidents of childbirth (149).
I.–II. Professional	4·44	3·94	0·17	0·50	1·45	0·81	0·40	0·52
III. Skilled ..	4·11	3·55	0·15	0·44	1·33	0·81	0·30	0·42
IV. Semi-skilled ..	4·16	3·60	0·16	0·48	1·21	0·84	0·32	0·46
V. Unskilled ..	3·89	3·32	0·12	0·60	1·16	0·68	0·26	0·40
All Married Women	4·13	3·57	0·15	0·49	1·29	0·79	0·31	0·44

Puerperal sepsis risks diminish progressively in passing from Class I–II to V, but puerperal hæmorrhage risks increase from III to V. The rate for puerperal albuminuria, convulsions and other toxæmias is lowest for the unskilled class, notwithstanding that in that class the greatest degree of poverty and malnutrition is presumably to be found. Amongst the other classes it shows no important variation. The risks from ectopic gestation and other accidents of pregnancy other than abortion, and from phlegmasia alba dolens and “other accidents of childbirth” are maximal in Class I–II and minimal in Class V.

Before drawing inferences from the rates in Table LXXXVII it is necessary to remember that the mortality risk from some of the causes there mentioned is higher at a first pregnancy than at subsequent pregnancies, or may be otherwise influenced by the number of previous confinements, and furthermore that the average size of family is not the same for married women in the different social classes. In a class where a higher proportion of the confinements are first pregnancies, the average mortality risk may be greater on that account, and the apparent excess of mortality rate in classes I–II may arise partly from that cause.

The distribution throughout the country of the mortality ascribed to childbirth is outlined in Table LXXXVIII. Sepsis mortality was higher in the rural districts than the towns, a reversal of the order of the preceding year. The London rate was the lowest in the table.

The rate was highest in Wales I, North III and II coming next in order.

Mortality from non-septic causes was highest in the small towns and lowest in London, the latter rate being the lowest in the table, as in 1931, 1932 and 1933. Wales registered the highest rates, followed by North III and I. The range of regional variation was, as usual, less for septic than non-septic causes.

Puerperal fever notification.—The records of cases of puerperal fever and pyrexia notified are collated with those of births and of deaths from this cause in Table LXXXVIII. The proportion to live births of puerperal fever cases notified is 41 per 10,000. This rate rose from 30 in 1927 to 40 in 1930, and fell to 35 in 1932 and 36 in 1933, and may have been affected by the compulsory notification of “puerperal pyrexia,” which was in force throughout the period, having commenced on October 1, 1926. “Fever” and “pyrexia” notifications combined in the five years from 1930 to 1934 totalled 127, 128, 123, 136 and 141 per 10,000 live births. The records of notifications under both headings will be found in Tables 28–29 in full detail of locality. As in the previous year the highest fever rates were recorded for Wales I, North III and Greater London, the pyrexia rates being highest in Greater London, North IV and III.

Table LXXXVIII—Distribution throughout England and Wales of Mortality of Women in Childbirth, distinguishing Septic and Other Causes, and of Prevalence of Puerperal Fever and Pyrexia, 1934.

	Per 1,000 Live Births.					Per 1,000 Live and Still Births.					"Puerperal Fever" Cases per 100 Deaths.
	Deaths.			Cases.		Deaths.			Cases.		
	Sepsis.	Other causes.	Total.	"Fever."	"Pyrexia."	Sepsis.	Other causes.	Total.	"Fever."	"Pyrexia."	
England and Wales ..	2.03	2.57	4.60	4.13	9.97	1.95	2.47	4.41	3.97	9.57	204
South-East ..	1.75	1.99	3.74	4.33	10.67	1.70	1.92	3.62	4.19	10.32	247
Greater London ..	1.55	1.63	3.18	4.50	11.79	1.50	1.58	3.07	4.35	11.41	291
Remainder of South-East..	2.07	2.53	4.61	4.07	8.95	2.00	2.45	4.45	3.93	8.65	196
North ..	2.14	3.03	5.17	3.94	10.27	2.04	2.90	4.94	3.76	9.81	184
North I ..	1.97	3.15	5.12	3.38	7.89	1.89	3.02	4.91	3.24	7.56	171
" II ..	2.44	2.68	5.12	3.94	8.45	2.33	2.56	4.89	3.77	8.07	162
" III ..	2.46	3.31	5.77	4.85	10.90	2.34	3.16	5.50	4.63	10.39	198
" IV ..	1.96	2.91	4.87	3.67	11.36	1.87	2.77	4.65	3.50	10.84	187
Midland ..	2.15	2.25	4.41	3.98	9.24	2.06	2.16	4.22	3.82	8.86	185
Midland I ..	2.18	2.03	4.21	4.22	10.19	2.09	1.95	4.04	4.05	9.77	194
" II ..	2.10	2.69	4.79	3.50	7.37	2.02	2.58	4.60	3.36	7.07	167
East ..	1.85	2.22	4.06	3.69	9.16	1.78	2.13	3.91	3.56	8.82	200
South West ..	1.57	2.60	4.17	3.17	10.09	1.51	2.50	4.00	3.04	9.68	202
Wales ..	2.90	4.08	6.98	5.56	7.51	2.75	3.86	6.61	5.26	7.11	191
Wales I ..	3.12	4.02	7.14	6.17	7.97	2.95	3.80	6.75	5.84	7.54	198
" II ..	2.24	4.27	6.51	3.66	6.10	2.12	4.06	6.18	3.48	5.79	164
County Boroughs*	2.04	2.55	4.60	5.13	11.79	1.96	2.45	4.40	4.91	11.29	251
Other Urban Districts*	2.18	3.11	5.29	3.43	8.77	2.09	2.97	5.06	3.28	8.38	157
Rural Districts*..	2.26	2.75	5.02	3.09	6.74	2.17	2.64	4.81	2.96	6.47	136
Greater Admin. County	1.34	1.46	2.80	4.56	13.58	1.29	1.41	2.71	4.41	13.15	341
London } Outer Ring ..	1.74	1.79	3.54	4.45	10.08	1.69	1.74	3.42	4.30	9.75	255

* Excluding Greater London.

The fever rate was lowest in the South West, and the pyrexia rate in Wales II.

The proportion of puerperal fever cases to sepsis deaths is lowest in North II and in Wales II, and highest in Greater London and the South West, the range of variation in the regions being from 162 to 291 cases notified per 100 deaths. In London the ratio was 341.

The mean rates of notification of puerperal fever per 1,000 live births in 1921–24 and 1931–34, and the percentage changes in the interval, are given for each county in Table XLVI. The largest percentage increases are shown by Lincoln (Kesteven), Yorkshire (N. Riding), Isle of Wight, Westmorland, Sussex West, and Lincoln (Holland). Seven counties show decreases, viz., Pembroke, Gloucester, Suffolk West, Cheshire, Brecknock, Warwick and Ely. The distribution of the counties according to 1931–34 rates of puerperal fever on the one hand and of erysipelas on the other is given in Table XLVII.

186. Crushing by Motor Vehicles (not on railways).—Apart from 461 deaths on railways and 67 caused by aircraft, there were 6,112 accidental deaths attributed to mechanically-propelled vehicles in 1934, 4,536 of males and 1,576 of females. The rate of mortality per million persons was 151 compared with 147 in 1933, 141 in 1932, 147 in 1931 and 159 in 1930. In Table LXXXIX, the allocation of deaths to the different types of mechanically-propelled road vehicles is shown. The deaths classified as "Others" in 1934 are made up as follows :—

Motor cab, 26; motor char-a-banc, 47; motor tractor, 5; steam roller, 5; other or undefined motor, 5, and collisions involving a motor vehicle without statement as to which of the vehicles caused the death, 1,495.

Table LXXXIX.—Deaths, and Death Rates per Million Living, caused by various Types of Road Motor Vehicles in each year—1928–34.

	Deaths.							Rate per Million Living.						
	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1928.	1929.	1930.	1931.	1932.	1933.	1934
Electric tram ..	101	89	73	74	52	66	69	2.6	2.2	1.8	1.9	1.3	1.6	1.7
Motor car ..	1,550	1,660	1,643	1,688	1,646	1,773	1,882	39.2	41.9	41.3	42.2	40.9	43.9	46.5
Motor van, lorry, etc.	938	1,162	1,273	1,209	1,111	1,180	1,290	23.8	29.3	32.0	30.2	27.6	29.2	31.9
Motor omnibus ..	557	584	692	529	447	421	413	14.1	14.7	17.4	13.2	11.1	10.4	10.2
Motor cycle.. ..	1,043	1,162	1,286	1,083	983	965	875	26.4	29.3	32.3	27.1	24.5	23.9	21.6
Others ..	1,007	1,095	1,375	1,309	1,432	1,529	1,583	25.5	27.6	34.5	32.7	35.6	37.9	39.1
Total motor vehicles	5,196	5,752	6,342	5,892	5,671	5,934	6,112	131.6	145.2	159.3	147.3	141.1	147.1	151.0

Lack of specification of the vehicle causing death in the last group renders the analysis of Table LXXXIX less complete than it would otherwise have been. It is regrettable that the distinction between the occupants of vehicles and pedestrians or cyclists cannot

always be made from the records of death certification, nor do the records furnish the information necessary for a satisfactory analysis of deaths according to the locality in which the accident occurred.

Deaths attributed to the motor omnibus have fallen progressively since 1930, the total registered deaths in the causation of which this type of vehicle was concerned (alone or in collision with some other vehicle) being 852, 699, 595, 559 and 537 in the five years 1930 to 1934. The same applies to the motor cycle, for which the corresponding totals have been 2,091, 1,797, 1,783, 1,727, 1,621, but for the motor car this total, after remaining almost stationary during 1930-32, rose sharply in 1933 and 1934 (2,219, 2,257, 2,291, 2,527, 2,700).

Pedal cycles are known to have been concerned in or responsible for the following accidental deaths:—

					1929.	1930.	1931.	1932.	1933.	1934.
Pedal cycles alone	..	..	..	{ M	207	258	235	308	345	399
				{ F	47	61	84	95	105	152
Pedal cycle in collision with other vehicles	..	..	..	{ M	232	294	309	431	544	627
				{ F	23	34	35	49	64	99
				{ M	439	552	544	739	889	1,026
Total	..	..	..	{ F	70	95	119	144	169	251
				{ P	509	647	663	883	1,058	1,277

The recent rapid increase of such deaths continued in 1934, the excess over the previous year being particularly great for females.

Table XC compares the mean annual death rates per million living due to accidents caused by all forms of road motor vehicles at various ages in 1934 with those in the three triennial periods 1925-27, 1928-30 and 1931-33. The male rate at all ages is about three times the female rate. This excess is present at each age, but the ratio of male to female risk increases with age to a maximum exceeding 7 at 20-25, then declines to about 2 at ages over 55.

Table XC.—Death rates per Million living from All Accidents caused by Road Motor Vehicles, by Sex and Age. 1925-27, 1928-30, 1931-33 and 1934.

	Males.				Females.			
	1925-27.	1928-30.	1931-33.	1934.	1925-27.	1928-30.	1931-33.	1934.
0-	107	142	143	135	55	87	88	95
5-	195	250	242	229	92	129	133	126
10-	102	132	106	107	26	40	37	38
15-	151	231	238	251	32	50	52	70
20-	233	365	393	414	30	57	55	58
25-	146	221	228	234	22	31	33	32
35-	112	147	142	155	23	33	33	31
45-	134	166	160	192	36	57	53	49
55-	170	239	228	228	75	95	104	100
65-	301	400	395	405	140	190	186	185
75 and over	490	738	711	753	179	276	260	355
All ages	159	226	225	224	48	71	72	75

From 1925-27 to 1928-30 the male rate at all ages rose by 42 per cent. and the female rate by 48 per cent. The changes which took place in the mean rates from 1928-30 to 1931-33 were, however, remarkably slight, the female rates remaining almost unchanged at each age under 45, whilst the male rates showed a rise for young adults balanced by a fall for boys of school age and men over 35.

In 1934 the mortality of boys under 10 and girls aged 5-10 declined in comparison with 1931-33, but there was an increase for female children under 5 and rates for both sexes at 10-15 were virtually unchanged. Males ages 15-55 and over 65, and females aged 15-25 and over 75 registered increases, the last-mentioned amounting to 36 per cent., but there was little change at other ages. As indicated in the Review for 1933, there are three ages of maximal risk, depending upon the fact that the death rates are the resultants of the combined risks to pedestrians, cyclists and occupants of motor vehicles, which are unfortunately inseparable. These three ages of maximal risk are the age of commencing pedestrian activity uncontrolled by experience, 5-10, the age of great motor driving activity not fully restrained by a sense of responsibility, 20-25, and old age with its physical inability to escape many traffic dangers.

Table 25 analyses according to sex and age the accidental deaths caused by each type of vehicle, and from that table it can be ascertained that the proportion of male to female deaths varies considerably according to the vehicle causing death and according to age, the percentage ratios being as follows :—

	All Ages.	0-5.	5-15.	15-25.	25-45.	45-65.	65 and over.
Motor car	188	133	170	275	332	184	135
Motor bus	187	88	191	218	306	185	154
Motor van, lorry	244	182	225	473	513	245	154
Pedal cycle	262	800	280	352	463	286	130
Motor cycle	373	157	140	605	814	194	196
Collisions between pedal cycle and other vehicle..	633	?	450	472	670	1,320	1,275

Male excess of deaths is greatest for collisions involving a pedal cycle, motor cycle accidents coming next, and is least for motor car and bus accidents. At ages under 15 years the greater risks taken by boys than girls in street play are reflected in these figures. At 5-15 the male excess is greater than at 0-5 for most vehicles, fatalities in which pedal cycles were involved being 3 or 4 times as frequent for boys as for girls, whilst those due to other vehicles were about twice as frequent. The much greater participation of young adult males in the driving of motor cycles and commercial vehicles, and in the riding of pedal cycles, results in male deaths numbering 5 to 8 times the female deaths at 15-45, after which age the contrasts become gradually less except for collisions involving pedal cycles (in which the rider is generally the victim).

199, 200. **Ill-defined Diseases.**—These headings in the International List of Causes of Death, to which 1,250 deaths have been

Table XCI.—Replies to Inquiries respecting Indefinitely Certified Causes of Death, 1934.

Subject of Inquiry.	Replies received.	Replies amplifying previous information.	Deaths allocated as the result of inquiry to certain headings.
Croup	10	9	Diphtheria 1, Laryngismus stridulus 1, Laryngitis 2.
Membranous laryngitis	5	5	Diphtheria 2. Laryngitis 2.
Pyæmia, septicæmia, etc.	141	112	Diseases of the teeth and gums 3, Diseases of the tonsils 11, Puerperal sepsis 2, Diseases of the skin 20.
Tuberculosis,	118	117	Tuberculosis of the respiratory system 62, Tuberculosis of central nervous system 6, Tuberculosis of intestines and peritoneum 5, Tuberculosis of other bones and joints 10, Tuberculosis of skin and subcutaneous tissues 1, Tuberculosis of lymphatic system 4, Disseminated tuberculosis 10, Other forms of tuberculosis 3.
Cancer (part or organ not stated).	1,209	1,162	Part or organ stated in 1,144 cases.
Cerebral tumour (P.M. cases).	267	258	Tuberculosis of central nervous system 7, Syphilis 3, Cancer 111, Glioma 66.
Tumour of other sites	765	634	Syphilis 3, Cancer 420.
Rheumatism	694	694	Rheumatic fever 234, Chronic rheumatism 2, Rheumatoid arthritis 6, Rheumatic heart disease 435.
Encephalitis	211	181	Influenza 12, Polioencephalitis 4, Encephalitis lethargica 89, Syphilis 2, Other forms of encephalitis 41.
Basal or basic meningitis.	26	25	Cerebro-spinal fever 9, Tuberculosis of central nervous system 5, Meningitis—other forms 5.
Posterior or post basal or post basic meningitis.	33	28	Cerebro-spinal fever 19, Tuberculosis of central nervous system 1, Meningitis—other forms 5.
Cerebro-spinal meningitis	118	114	Measles 1, Influenza 2, Cerebro-spinal fever 96, Tuberculosis of central nervous system 2, Meningitis—other forms 9.
Spinal sclerosis ..	11	11	Tabes dorsalis 1, Other diseases of the spinal cord 3, Disseminated sclerosis 4.
Paraplegia	30	18	Tabes dorsalis 1, Other diseases of the spinal cord 5, Disseminated sclerosis 2.
General paralysis (outside asylums).	14	12	General paralysis of the insane 9.

Table XCI—*continued.*

Subject of Inquiry.	Replies received.	Replies amplifying previous information.	Deaths allocated as the result of inquiry to certain headings.
Paralysis	7	6	Syphilis 1, Paralysis agitans 1, Disseminated sclerosis 1.
Aortitis, arteritis and endarteritis.	133	125	Syphilis 58, General paralysis of the insane 1, Aneurysm 1, Arterio-sclerosis 11.
Fibroid phthisis ..	64	62	Tuberculosis of respiratory system 45, Chronic interstitial pneumonia 7.
Hæmoptysis	20	18	Tuberculosis of respiratory system 10, Aneurysm 1.
Stomatitis	16	16	Thrush, aphthous stomatitis 5.
Stricture of œsophagus	18	17	Cancer 8.
Hæmatemesis	34	29	Cancer 4, Ulcer of stomach or duodenum 14.
Pyloric stenosis, obstruction, etc.	55	55	Cancer 14, Ulcer of stomach or duodenum 26.
Jaundice	32	25	Cancer 3, Biliary calculi 8.
Peritonitis	102	72	Influenza 1, Tuberculosis of intestines and peritoneum 1, Cancer 1, Ulcer of stomach or duodenum 7, Appendicitis 16, Hernia 1, Intestinal obstruction 4, Diseases of the female genital organs 9.
Pemphigus of infants	60	55	Syphilis 8.
Hydrocephalus ..	51	50	Encephalitis lethargica 1, Tuberculosis of central nervous system 3, Congenital hydrocephalus 27.
Violence	418	408	Precise form of suicide 112, Drowning 1, Injury by fall 49, Injury in mines and quarries 23, Injury by crushing 68.
Syncope, Heart Failure.	112	104	Influenza 1, Syphilis 1, Rheumatic fever 1, Diseases of the heart 57, Arterio-sclerosis 6, Bronchitis 10, Nephritis 4.
Operation	660	628	Cancer 49, Tumours of female genital organs 44, Ulcer of stomach or duodenum 43, Appendicitis 18, Hernia, Intestinal obstruction 54, Biliary calculi 74, Other diseases of the gall bladder 32, Diseases of the prostate 38, Diseases of the female genital organs 42, Congenital malformations 8, Violence 10.
Other indefinite forms of certification.	2,538	2,303	—————
Total	7,972	7,353	—————

allocated, exclude the ill-defined diseases of infancy and old age, 158 and 162 (*b*). In the more comprehensive sense resulting from their inclusion, the deaths from ill-defined causes in 1934 numbered 18,028, or 3·78 per cent. of the total, as compared with 3·89 in 1933, 4·19 in 1932 and 9·67 in 1911.

Inquiries sent to medical practitioners and coroners requesting further information as to indefinitely certified deaths amounted to 8,649, and to these 7,972 replies were received, with results to classification, some of the most important of which are set out in Table XCI.

The total additions to certain definite headings resulting from these inquiries were as follows:—To influenza, 48; to encephalitis lethargica, 91; to cerebro-spinal fever, 127; to tuberculosis of the respiratory system, 152; to other forms of tuberculosis, 107; to venereal diseases, 129; to cancer, 671; to diseases of the spinal cord, 21; to general paralysis of the insane, 13; to disseminated sclerosis, 10; to arterio-sclerosis, 50; to ulcer of stomach and duodenum, 131; to appendicitis, 69; to biliary calculi, 102; to chronic nephritis, 70; to diseases of the prostate, 81; to puerperal sepsis, 68; to congenital malformations, 67.

In addition to the foregoing, 2,003 inquiries were addressed to medical practitioners who had initialled statement “B” on the back of the new form of medical certificate, thereby indicating the possibility of their being in a position to furnish additional information respecting the certified cause of death as the result of a P.M. or laboratory examination which was not available at the time of signing the certificate. Of the 1,788 replies received to these inquiries, 875 amended the original certification.

Anæsthetics.—The usual annual statement of deaths during or connected with the administration of an anæsthetic is continued. This is obtained by secondary tabulation of these deaths, since the primary tabulation, represented by Table 21, classified all such deaths to the disease or injury on account of which the anæsthetic was administered.

The total number of deaths in Table XCII, 814, is 46 more than in 1933, and is the largest number yet recorded. During the years for which fully comparable figures can be stated these deaths first increased slowly from 276 in 1911 to 366 in 1920, declined to 336 in 1922, rose to 446 and remained about that level to 1925. They then increased rapidly to 730 in 1929, and have risen further in the last three years.

For the years before 1911 the record is contained in the tables of accidental deaths, but certain causes—strangulated hernia and cancer—were at this time preferred in tabulation to the anæsthetic used. In 1934 the 814 deaths included 112 associated with cancer, and 58 with hernia. So for comparison with the years prior to 1911 the number of deaths should be reduced to 644. But during 1901–10 the deaths ranged from 133 (1901) to 234 (1910).

Table XCII.—Deaths under or connected with the Administration of various Anæsthetics, according to Sex and Age—1934.

Anæsthetic.					Age.																
					All Ages.	0-	1-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	65-		
Chloroform	..	..	..	{M. F.	34 34	- 1	5 2	2 1	2 1	1 1	1 6	2 4	2 7	1 2	3 1	- 1	3 1	8 2	4 4
Chloroform and ether	..	..	..	{M. F.	104 76	1 1	6 7	6 6	4 3	1 7	8 1	6 9	9 7	9 8	1 5	9 8	7 3	21 6	16 5
Chloroform, ether and ethyl chloride	..			{M. F.	5 2	- -	1 1	- -	2 -	- -	- -	- -	- -	- -	- -	- -	1 1	1 -	- -		
Chloroform and ethyl chloride	..	..	F.	F.	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform, ether and evipan	..	..	F.	F.	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Chloroform, ether and stovaine	..			{M. F.	1 1	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 1	1 -		
Chloroform and avertin	..	..	M.	M.	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Ether	..	..	..	{M. F.	135 117	9 1	18 13	8 15	11 2	2 5	6 14	8 10	5 9	8 6	5 10	3 5	6 9	25 13	21 5
Ether and ethyl chloride	..	..		{M. F.	35 34	4 2	10 7	3 5	- 1	1 1	1 -	1 3	1 2	1 -	1 2	1 5	2 3	4 2	3 1
Ether and atropine	..	..	..	M.	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Ether and avertin	..	..	..	{M. F.	2 2	- -	- -	- -	1 1	1 1	- -	- -	- -	- -	- 1	- -	- -	- -	- -
Ether and evipan	..	..	..	F.	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Ether and nembutal	..	..	..	F.	2	-	-	-	-	-	-	1	-	-	1	-	-	-	-
Ether and percaïne	..	..	..	{M. F.	1 1	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 1	- -	- -
Ether and stovaine	..	..	..	F.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Ethyl chloride	..	..	..	{M. F.	13 5	1 -	7 2	2 2	- 1	1 -	- -	- -	- -	- -	- -	- -	1 -	1 -	- -
A.C.E. mixture	..	..	..	M.	4	-	1	1	1	-	-	1	-	-	-	-	-	-	-
Nitrous oxide	..	..	..	{M. F.	33 35	- -	1 3	- 2	- 2	- 1	2 -	- 1	2 2	4 3	2 1	- 5	6 5	9 4	7 6
Avertin	..	..	..	{M. F.	3 6	- -	- -	- -	- 1	- -	- 2	- 1	- -	- 1	- -	- -	1 -	2 1	- -
Cocaine	..	..	..	M.	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Cocaine and adrenalin	..	..	..	{M. F.	1 1	- -	- -	- -	- -	- -	1 -	- -	- 1	- -	- -	- -	- -	- -	- -
Drenocaine	..	..	..	M.	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Duracaine and atropine	..	..	..	F.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Duracaine and planocaine	..	..	..	M.	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Evipan	..	..	..	{M. F.	5 8	- -	- -	1 -	- 1	- -	- -	- -	- 1	1 1	- 1	- -	- 1	1 2	2 2
Nembutal	..	..	..	F.	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Neocaine	..	..	..	M.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Nepenthe	..	..	..	M.	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Novocaine	..	..	..	{M. F.	18 7	- -	- -	1 -	- -	- -	- -	- -	- -	2 -	- -	- -	2 1	6 3	7 3
Novutox	..	..	..	F.	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Pantocaine	..	..	..	M.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Table XCII—continued.

Anæsthetic.		Age.															
		All Ages.	0-	1-	5-	10-	15-	20-	25-	30-	35-	40-	45-	50-	55-	65-	
Percaine	.. .. . {M. F.	18 18	- 1	- -	- -	- -	- -	- -	- -	- 2	- 2	- -	1 1	1 -	6 6	10 6
Planocaine	.. .. . F.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Spinocaine	.. .. . {M. F.	4 3	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 2	- -	- -	3 -	1 1
Spinocaine and evipan	.. .. . M.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Stovaine	.. .. . {M. F.	7 10	- -	- -	- -	- -	- -	- 1	- 1	- -	- -	- 1	1 1	1 -	2 4	3 3
Stovocaine	.. .. . M.	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Vinethane	.. .. . M.	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Kind not stated	.. .. . {M. F.	6 4	- -	1 1	- 1	- -	2 -	- -	- 1	- -	- 1	- 1	- -	- -	1 -	2 -
Total	.. .. . {M. F.	440 374	15 6	51 37	24 32	21 11	9 17	20 21	18 32	19 35	27 21	16 24	16 29	32 24	91 46	81 39

Subject to allowance, on the scale indicated by this reduction, for the more comprehensive nature of the figures from 1911 onwards, the records of the present century may be compared as in Table XCIII.

The increase since 1911-15 is very general in its application to sex and age, but is relatively greater at ages over 55, and least for males aged 25-45.

Prior to 1921 deaths of males were in excess of those of females at almost every age; but in each year since, except 1923, females have been in excess at 25-45 and in a few years at 15-25 and 45-55 also.

The anæsthetic agents recorded on death certificates have altered considerably in recent years, as may be seen from Table XCIV. A further increase is recorded in 1934 in the deaths associated with ethyl chloride in combination with ether, which numbered 69, and in the number associated with nitrous oxide, which reached 68. The increasing employment of cocaine derivatives is reflected in the very rapid rise in the number of deaths associated with this group of anæsthetics, from 38 in 1931 to 98 in 1934.

It need scarcely be pointed out that these fatalities depend upon the extent to which the various agents are used as well as upon the risk attaching to them. But unfortunately the deaths associated with each type of anæsthetic cannot be collated with the number of its administrations. It is not even possible to say whether, or to what extent, the rapid increase in the number of these deaths implies increased mortality under anæsthetics. The number of administrations is known to be increasing very rapidly, but cannot be estimated. The deaths tabulated, moreover, can only be those under, not those caused by, anæsthesia. It is impossible from

certification to distinguish between deaths from operation under anæsthesia and deaths due to the anæsthetic itself.

Of the 814 deaths in 1934 shown in Table XCIII, 658 (81 per cent.) were classed to the 22 headings enumerated in Table XCV, the remainder being of very varied causation. The composition of this list changes little from year to year.

Table XCIII.—Deaths under or associated with Anæsthesia 1901–34.

Year.	Males.									Females.								
	All ages	0–	5–	15–	25–	35–	45–	55–	65–	All ages	0–	5–	15–	25–	35–	45–	55–	65–
Yearly average:																		
1901–05* ..	95	14	20	9	13	16	11	7	4	53	6	9	7	11	8	8	3	2
1906–10* ..	125	26	20	12	16	18	16	9	8	77	7	14	9	18	11	10	4	3
1911–15 ..	167	30	23	14	20	28	24	16	10	116	14	17	15	16	22	18	10	5
1916–20 ..	188	36	25	25	27	22	20	19	13	119	11	16	14	21	22	17	7	9
1921–25 ..	229	40	28	20	18	27	36	37	24	169	20	17	17	30	29	25	17	12
1926–30 ..	361	56	47	30	26	37	50	62	53	288	29	29	29	44	51	49	34	23
1921 ..	204	30	29	16	16	19	34	30	30	133	16	23	16	24	21	19	11	3
1922 ..	185	29	21	16	9	27	30	35	18	151	16	15	12	29	31	26	12	10
1923 ..	262	45	37	29	17	38	35	34	27	184	22	23	14	23	32	32	23	15
1924 ..	245	51	30	21	25	21	42	39	16	184	26	11	30	29	31	21	18	18
1925 ..	249	43	25	17	23	28	39	45	29	193	22	14	15	43	32	29	23	15
1926 ..	306	57	43	23	29	34	39	43	38	250	32	22	29	35	44	51	23	14
1927 ..	328	43	51	25	20	30	42	70	47	268	24	28	29	46	47	40	35	19
1928 ..	384	63	41	30	23	43	55	67	62	272	29	21	27	44	45	44	33	29
1929 ..	414	66	61	31	25	43	63	64	61	316	35	35	27	52	52	50	43	22
1930 ..	375	51	41	39	34	34	52	68	56	332	27	39	33	45	66	58	35	29
1931 ..	413	60	51	44	36	41	51	73	57	310	27	40	23	60	55	43	38	24
1932 ..	416	66	49	37	29	45	58	68	64	333	24	40	33	60	58	42	36	40
1933 ..	425	67	47	44	22	42	56	78	69	343	35	39	47	50	44	48	47	33
1934 ..	440	66	45	29	37	43	48	91	81	374	43	43	38	67	45	53	46	39

Deaths in later periods compared with those of 1911–15 taken as 100.

Yearly average:																		
1911–15 ..	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1916–20 ..	113	120	109	179	135	79	83	119	130	103	79	94	93	131	100	94	70	180
1921–25 ..	137	133	122	143	90	96	150	231	240	146	143	100	113	188	132	139	170	240
1926–30 ..	216	187	204	214	130	132	208	388	530	248	207	171	193	275	232	272	340	460
1931 ..	247	200	222	314	180	146	213	456	570	267	193	235	153	375	250	239	380	480
1932 ..	249	220	213	264	145	161	242	425	640	287	171	235	220	375	264	233	360	800
1933 ..	254	223	204	314	110	150	233	488	690	296	250	229	313	313	200	267	470	660
1934 ..	263	220	196	207	185	154	200	569	810	322	307	253	253	419	205	294	460	780

* Excluding deaths from cancer and strangulated hernia—see page 138.

The numbers of deaths reported from different classes of institutions, etc., in various regions of the country are stated in Table XCVI, in which, as place of occurrence is evidently of more interest for these deaths than place of residence, they have been tabulated by area of registration.

Since most of these deaths occur in institutions to which patients are drawn from wide areas, it is not surprising to find that the ratio of anæsthetic deaths to resident population is highest in Greater London, 28 to each million, and lowest in the Midland, South-West and Welsh regions, where the ratio is 14 to each million.

Status Lymphaticus and Anæsthetics.—The deaths from status lymphaticus primarily classified to diseases of the thymus (67) in Table 21 reached a maximum of 202 in 1929, but then fell somewhat precipitately to 138 in 1930. In the last 4 years they have numbered 143, 154, 153 and 133. In addition to these 133 deaths, there were

Table XCIV.—Deaths under or associated with the Administration of Various Anæsthetics in each year, 1922 to 1934.

	Sex.	Average 1922-24.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.
<i>Anæsthetics of the Methane series:—</i>												
Chloroform (alone) .. {	M.	49	43	54	48	75	63	51	58	52	52	34
	F.	31	40	47	53	36	41	37	37	36	31	34
Ether (alone) .. {	M.	57	61	105	101	118	142	126	134	130	134	135
	F.	44	52	67	72	108	121	130	114	118	115	117
Chloroform and ether {	M.	70	91	89	100	120	116	115	126	103	91	104
	F.	49	57	78	69	80	93	87	79	68	87	76
A.C.E. mixture .. {	M.	7	11	9	9	5	3	1	10	3	4	4
	F.	5	3	8	2	—	6	3	—	5	1	—
Ether and ethylchloride {	M.	1	7	10	15	9	12	16	28	24	31	35
	F.	1	3	7	17	7	13	16	10	19	26	34
Other mixtures, in- cluding chloroform or ether.* {	M.	3	5	4	4	6	8	5	2	8	6	11
	F.	4	2	7	7	3	4	5	8	11	11	12
Ethanosal .. {	M.	1	1	—	—	—	—	—	—	—	—	—
	F.	2	—	—	—	—	—	—	—	—	—	—
Ethyl chloride (alone) {	M.	2	5	4	8	6	7	6	3	7	8	13
	F.	2	6	3	6	3	3	4	11	7	4	5
Barbituric Acid group— Nembutal, Evipan {	M.	—	—	—	—	—	—	—	—	—	1	5
	F.	—	—	—	—	—	—	—	3	—	1	9
Avertin (alone) .. {	M.	—	—	—	—	—	1	1	2	5	5	3
	F.	—	—	—	—	—	1	1	3	4	4	6
Avertin with cocaine derivative. {	M.	—	—	—	—	—	—	—	—	—	—	—
	F.	—	—	—	—	—	—	—	1	2	—	—
Nitrous oxide .. {	M.	8	5	9	13	18	27	23	21	36	34	33
	F.	4	4	6	19	12	11	18	22	27	24	35
<i>Opium or Morphine and their preparations with atropine, hyoscine or co- caine derivative.</i> {	M.	—	1	—	1	—	—	1	—	1	—	—
	F.	—	—	—	—	—	—	1	1	1	—	—
<i>Cocaine and its prepara- tions and substitutes (without any of above):—</i>												
Stovaine .. {	M.	4	2	3	4	2	3	4	2	6	5	7
	F.	2	5	6	5	3	6	3	2	6	5	10
Novocaine .. {	M.	2	2	2	5	9	12	10	6	20	18	18
	F.	2	2	1	3	6	3	11	4	9	8	7
Percaine .. {	M.	—	—	—	—	—	—	1	7	10	11	18
	F.	—	—	—	—	—	1	2	6	13	13	18
Others .. {	M.	—	—	2	4	2	7	3	7	8	18	13
	F.	1	1	3	1	4	4	2	4	5	10	7
<i>Miscellaneous or unspeci- fied, including combina- tions of, or containing the above, not distinguished.</i> {	M.	27	15	15	16	14	13	12	7	3	7	7
	F.	27	18	17	14	10	9	12	5	2	3	4
Total .. {	M.	231	249	306	328	384	414	375	413	416	425	440
	F.	173	193	250	268	272	316	332	310	333	343	374

* Including combinations of chloroform or ether with morphia, atropine, nembutal or cocaine derivatives or substitutes.

Table XCV.—Classification of Deaths under or associated with Anæsthesia, 1934.

	Cause to which Death was assigned.	Males.	Females.		Cause to which Death was assigned.	Males.	Females.
24-32	Non-respiratory tuberculosis.	8	7	121	Appendicitis ..	41	41
45-53	Cancer	66	46	122 a	Hernia	44	14
54 a	Non-malignant tumours of Female Genital Organs.	—	14	122 b	Intestinal obstruction.	23	13
66 b	Exophthalmic goitre	—	15	126	Biliary calculi ..	4	7
89 b	Diseases of the mastoid sinus.	10	13	127 (pt.)	Diseases of the gall bladder.	1	6
104	Diseases of the nasal fossæ and annexa.	3	5	129	Peritonitis ..	5	4
110 : 1	Empyema.. ..	6	6	137	Diseases of the prostate.	14	—
115 : 1	Extraction of teeth.	11	17	138 (pt.)	Circumcision ..	7	—
115 : 3	Diseases of the tonsils.	26	14	140-150	Childbirth and abortion.	—	47
117	Ulcer of the stomach or duodenum.	33	6	154	Acute infective osteomyelitis.	2	2
				157	Congenital malformations.	14	6
				163-198	Violence	43	14

Table XCVI.—Deaths under Anæsthetics Registered in 1934. Distribution by Part of Country and Place of Occurrence.

	Greater London.	South-East excluding Greater London.	North.	Midland.	East.	South-West.	Wales.	England and Wales.
Hospitals {M.	87	52	103	44	21	10	14	331
.. .. {F.	73	34	102	31	8	11	16	275
Public Assistance Institutions {M.	35	8	21	6	—	2	1	73
.. .. {F.	25	9	17	7	—	1	1	60
Mental Hospitals .. {M.	2	1	—	—	—	—	—	3
.. .. {F.	—	—	—	—	—	—	—	—
Nursing Homes .. {M.	7	5	—	—	1	1	1	15
.. .. {F.	4	1	5	2	—	—	—	12
Elsewhere {M.	3	2	8	3	—	1	1	18
.. .. {F.	3	5	13	3	—	2	1	27
Total {M.	134	68	132	53	22	14	17	440
.. .. {F.	105	49	137	43	8	14	18	374

in 1934 57 deaths under anæsthetics in the case of which record was made of the presence of this condition but which have been referred in tabulation to the condition occasioning the administration of the anæsthetic.

The sex and age distribution of these was as follows :—

	All Ages.	0—	5—	10—	15—	20—	25—	35—
Males	34	17	7	2	2	2	4	—
Females	23	8	5	1	4	3	2	—

Standardized Mortality of the County Boroughs and Administrative Counties in 1931-1934 compared with 1911-1914.

The method of standardization of local death rates to correct for peculiarities in the sex and age constitution of their populations described on pages 4-8 has been applied to the mean mortality in 1931-1934 of each county borough and administrative county, and the resulting standardized ratios have been expressed in percentage form in column 14 of Table XCVII and column 9 of Table XCVIII. The average of the crude death rates of the 4 years, multiplied by the comparability factor given in column 13 of Table 17 (Part I 1934) gives the mean adjusted death rate in 1931-34. When divided by the average of the crude death rates for England and Wales in the 4 years, the resulting ratio of the local adjusted rate to the national rate may be conveniently termed the *standardized ratio* for 1931-1934, and 100 times this ratio is the value shown in the Tables. A precisely comparable series of percentage ratios for 1911-1914 has been calculated by dividing the average of the standardized death rates as tabulated in the annual reports of those 4 years by the average of the standardized rates for England and Wales and multiplying by 100, the resulting values being given in column 12 of Table XCVII and column 7 of Table XCVIII. For the county boroughs a third series of ratios between local and national standardized mortalities, which is comparable with the other series, has been calculated for 1921-1924, this series being shown in column 13 of Table XCVII.

Table XCVII.—Standardized Mortality in 1931-34 and 1921-24 compared with 1911-14; social classification of male population, housing density and latitude, and mortality corrected for these factors in each County Borough.

County Borough.	Latitude.	Persons per room, 1931.	No. of occupied males, aged 14 up, 1931.	Proportion of these (per mille) in Social Class :—					Ratio of adjusted to national death rate, 1929-33.	Calculated ratio on basis of regression formula.*	Actual per cent. of calculated ratio.	Mean local adjusted rate per cent. of national rate in :—			Per cent. decline in S.D.R. since 1911-14.
				I	II.	III.	IV.	V.				1911- 14.	1921- 24.	1931- 34.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Barnsley	53	0·91	24,517	12	71	510	251	157	1·24	1·17	106	134	127	123	34
Barrow-in-Furness ..	54	0·89	24,174	12	86	517	166	219	1·11	1·18	94	112	102	116	25
Bath	51	0·69	20,125	31	149	560	100	161	0·84	0·93	90	84	88	88	24
Birkenhead	53	0·89	47,865	22	98	462	121	297	1·14	1·16	98	119	109	116	29
Birmingham	52	0·83	333,470	16	112	549	161	162	1·05	1·06	99	118	102	105	35
Blackburn	53	0·82	41,261	16	115	548	126	196	1·16	1·09	106	124	123	119	31
Blackpool	53	0·67	31,006	31	203	512	102	152	1·08	0·98	110	107	117	110	25
Bolton	53	0·85	60,590	15	102	522	172	188	1·21	1·12	108	123	121	120	29
Bootle	53	0·95	24,615	9	65	422	142	362	1·30	1·23	106	137	118	136	28
Bournemouth	50	0·64	31,115	47	191	563	75	124	0·86	0·84	102	74	93	89	13
Bradford	53	0·88	98,882	14	130	495	201	160	1·17	1·13	104	119	121	119	28
Brighton	50	0·79	45,230	30	146	537	119	168	0·93	0·96	97	93	95	96	25
Bristol	51	0·81	128,445	21	125	504	117	233	0·95	1·03	92	100	97	96	31
Burnley	53	0·85	34,029	13	98	583	158	149	1·23	1·09	113	136	134	127	33

* Based upon the three variables, persons per room, proportion of occupied males in classes IV and V and latitude

Table XCVII.—*continued.*

County Borough.	Latitude.	Persons per room, 1931.	No. of occupied males, aged 14 up, 1931.	Proportion of these (per mille) in Social Class :—					Ratio of adjusted to national death rate, 1929-33.	Calculated ratio on basis of regression formula.*	Actual per cent. of calculated ratio.	Mean local adjusted rate per cent. of national rate in :—			Per cent. decline in S.D.R. since 1911-14.
				I	II.	III.	IV.	V.				1911- 14.	1921- 24.	1931- 34.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Burton-upon-Trent ..	52	0.76	16,721	15	90	451	134	311	1.02	1.08	94	98	98	101	26
Bury ..	53	0.84	19,640	18	112	481	202	186	1.18	1.12	105	123	128	120	30
Canterbury ..	51	0.72	8,011	24	135	493	155	192	0.93	0.98	95	86	86	91	24
Carlisle ..	54	0.95	17,806	22	104	496	149	228	1.11	1.21	92	121	120	113	33
Chester ..	53	0.85	13,706	29	119	501	126	226	1.18	1.11	106	111	115	116	24
Coventry ..	52	0.85	61,041	11	96	550	209	133	1.03	1.08	95	96	92	102	24
Croydon ..	51	0.75	75,800	41	169	578	68	143	0.88	0.94	94	82	90	90	21
Darlington ..	54	0.91	23,676	19	107	516	155	202	1.04	1.18	88	104	112	103	28
Derby ..	52	0.75	47,538	14	92	568	154	172	1.01	1.02	99	97	97	101	25
Dewsbury ..	53	1.02	18,355	13	109	481	259	138	1.27	1.22	104	130	126	126	30
Doncaster ..	53	0.75	21,712	18	104	558	158	161	1.00	1.05	95	118	105	98	40
Dudley ..	52	1.00	20,132	11	92	515	155	227	1.22	1.17	104	119	109	119	28
Eastbourne ..	50	0.69	15,945	42	156	559	101	142	0.83	0.89	93	76	83	88	16
East Ham ..	51	0.93	49,805	9	93	586	109	202	0.95	1.07	89	85	91	100	15
Exeter ..	50	0.73	20,959	33	143	523	118	182	0.91	0.93	98	100	95	92	34
Gateshead ..	54	1.23	39,342	12	73	485	190	241	1.24	1.36	91	131	131	128	29
Gloucester ..	51	0.75	17,175	18	117	502	143	220	1.00	1.00	100	98	95	103	24
Great Yarmouth ..	52	0.65	17,290	18	136	450	145	251	0.95	1.00	95	100	94	98	30
Grimsby ..	53	0.81	32,436	15	104	361	252	268	1.10	1.17	94	106	105	109	26
Halifax ..	53	0.90	33,037	16	136	481	190	177	1.20	1.14	105	116	120	122	24
Hastings ..	50	0.70	17,350	36	157	524	106	177	0.85	0.91	93	85	92	90	23
Huddersfield ..	53	0.91	39,188	17	132	509	188	155	1.17	1.14	103	114	117	119	24
Ipswich ..	52	0.69	28,302	20	126	523	133	198	0.88	0.99	89	97	84	92	32
Kingston-upon-Hull ..	53	0.89	104,626	14	102	414	168	302	1.18	1.18	100	115	116	115	28
Leeds ..	53	0.87	161,721	19	132	517	152	181	1.21	1.11	109	121	121	120	28
Leicester ..	52	0.69	80,517	15	126	568	158	133	1.03	0.98	105	104	90	105	27
Lincoln ..	53	0.74	22,793	20	115	497	183	185	1.01	1.07	94	95	94	101	24
Liverpool ..	53	0.93	267,670	14	89	462	129	305	1.31	1.19	110	147	129	134	34
Manchester ..	53	0.87	257,368	16	117	516	156	196	1.29	1.12	115	133	128	128	31
Middlesbrough ..	54	1.03	46,206	12	76	418	160	333	1.35	1.30	104	150	139	133	36
Newcastle-upon-Tyne ..	54	1.13	93,190	20	98	496	155	231	1.19	1.30	92	124	124	122	29
Northampton ..	52	0.70	31,782	16	120	607	131	125	0.90	0.96	94	98	90	93	31
Norwich ..	52	0.71	40,527	20	118	559	134	169	0.93	0.99	94	95	89	94	29
Nottingham ..	52	0.78	87,849	14	113	513	183	176	1.13	1.05	108	113	108	112	28
Oldham ..	53	0.89	49,617	13	80	530	186	190	1.38	1.14	121	139	140	137	29
Oxford ..	51	0.72	25,224	32	126	574	109	159	0.88	0.95	93	85	87	87	26
Plymouth ..	50	0.96	69,646	27	88	602	95	188	1.08	1.04	104	107	102	110	26
Portsmouth ..	50	0.76	79,156	30	101	607	98	162	1.03	0.93	111	98	92	104	23
Preston ..	53	0.85	39,271	13	97	517	129	244	1.21	1.12	108	132	122	126	31
Reading ..	51	0.75	31,811	23	123	524	119	211	0.93	0.99	94	83	86	95	18
Rochdale ..	53	0.85	31,329	13	103	492	188	204	1.27	1.13	112	123	127	130	24
Rotherham ..	53	0.91	24,347	12	76	490	183	239	1.08	1.17	92	122	113	111	34
St. Helens ..	53	1.13	36,062	8	57	454	244	236	1.28	1.30	98	140	120	126	35
Salford ..	53	0.94	75,501	10	91	475	179	245	1.35	1.19	113	136	133	137	27
Sheffield ..	53	0.87	178,559	14	101	503	168	214	1.08	1.14	95	122	108	110	35
Smethwick ..	52	0.82	28,771	9	91	563	168	170	1.05	1.06	99	107	100	104	30
Southampton ..	50	0.80	58,516	21	112	528	109	230	0.98	0.98	100	99	93	99	28
Southend-on-Sea ..	51	0.72	35,339	55	217	532	83	113	0.90	0.91	99	81	91	96	15
Southport ..	53	0.68	22,629	52	226	506	93	124	0.97	0.97	100	93	100	100	22
South Shields ..	54	1.18	35,407	12	87	470	234	197	1.31	1.34	98	132	131	133	27
Stockport ..	53	0.82	42,704	22	138	497	155	188	1.13	1.09	104	121	115	116	31
Stoke-on-Trent ..	53	1.04	92,173	10	78	509	210	194	1.28	1.23	104	143	132	128	35
Sunderland ..	54	1.22	58,458	16	85	488	190	222	1.31	1.35	97	130	132	128	29
Tynemouth ..	55	1.08	21,081	19	103	456	186	236	1.12	1.32	85	122	122	116	31
Wakefield ..	53	0.91	19,657	19	104	508	211	158	1.17	1.15	102	114	118	115	27
Wallasey ..	53	0.71	30,161	42	181	527	80	169	0.96	1.00	96	96	98	102	23
Walsall ..	52	0.91	34,399	10	97	519	188	187	1.11	1.12	99	122	110	108	36
Warrington ..	53	0.98	27,480	6	59	470	141	324	1.26	1.23	102	127	114	125	28
West Bromwich ..	52	1.01	27,140	9	84	530	166	212	1.15	1.17	98	121	115	114	32
West Ham ..	51	1.14	97,889	6	65	446	143	340	1.09	1.24	88	114	107	112	29
West Hartlepool ..	54	1.00	22,066	17	92	436	136	318	1.20	1.26	95	122	119	120	29
Wigan ..	53	1.00	28,615	12	90	477	273	147	1.37	1.22	112	147	134	137	33
Wolverhampton ..	52	0.87	44,755	15	102	533	179	171	1.04	1.09	95	115	104	105	34
Worcester ..	52	0.77	16,358	20	124	529	135	193	0.99	1.03	96	99	95	104	24
York ..	53	0.84	28,754	20	98	488	163	231	0.99	1.13	88	99	100	101	26
Cardiff ..	51	0.86	72,622	26	128	488	129	229	1.09	1.05	104	110	116	115	25
Merthyr Tydfil ..	51	0.88	24,932	11	70	494	283	142	1.27	1.09	117	120	120	132	21
Newport (Mon.) ..	51	0.87	30,013	23	106	458	123	290	1.08	1.08	100	105	105	115	21
Swansea ..	51	0.90	55,195	22	111	477	130	260	1.11	1.09	102	118	107	114	30

* Based upon the three variables, persons per room, proportion of occupied males in classes IV and V and latitude

Although these columns show what changes have occurred in the standardized mortality of each town or county expressed as a percentage of the national rate, they do not indicate directly the amount of fall in the death rate and column 15 has therefore been added to Table XVCII and column 10 to Table XCVIII, giving the percentage decline in the standardized death rates during the 20 years from 1911—1914 to 1931—1934.

Administrative Counties.—The range above and below the national rate is indicated in Table XCIX. In 1911–1914 there were 8 counties with standardized mortality 3 or more per cent. above the national rate, these being in descending order, Durham, Lancashire, London, Yorkshire West Riding, Glamorgan, Staffordshire, Caernarvon and Merioneth. These counties comprised more than 40 per cent. of the total population of the administrative counties and this fact exaggerates the asymmetry of the distribution about the national rate taken as 100, although most of the asymmetry arises from the much lower rates in the administrative counties as a whole than in the county boroughs. The 7 counties having a percentage standardized ratio less than 78 were, in ascending order, Surrey, Sussex East and West, Hertford, Berkshire, Southampton and Isle of Wight.

In 1931–1934 the distribution has become less asymmetrical about the national rate of 100 owing to the contrast between the town and county mortalities having diminished, with convergence of each towards the national average. The 8 counties with a standardized ratio 9 or more per cent. in excess of the national rate are, in descending order, Glamorgan, Durham, Lancashire, Carmarthen, Merioneth, Monmouth, Yorkshire West Riding and Caernarvon. Comparing these with the first 8 in 1911–1914 it is perceived that London and Staffordshire have given place to Carmarthen and Monmouth, the other 6 being the same. The 8 counties with a percentage standardized ratio less than 86 are Surrey, Norfolk, Cambridge, Hertford, Berkshire, Oxford, Suffolk East and Sussex West.

The rate of decline in the standardized death rates during the 20 years has ranged from 29 to 12 per cent. and if the counties are arranged in descending order of the amount of improvement the first 8 are London (29), Durham and Staffordshire (28), Cheshire, Lancashire, Lincolnshire (Holland), Yorkshire, North and West Ridings (27), whilst the last 9 are Peterborough, Shropshire, Sussex West, Anglesey, Glamorgan and Pembroke (19), Sussex East (18), Montgomery (17) and Westmorland (12).

County Boroughs.—Table XCIX demonstrates in unmistakable fashion the effect of public health and social welfare measures during the last 20 years in diminishing the contrasts between the mortality risks in the good and the bad towns. In 1911–1914 the standardized ratios of the 83 towns now classed as county boroughs

Table XCVIII.—Standardized mortality in 1931-34 compared with 1911-14, social classification and housing density, in each Administrative County.

Administrative County.	Persons per room, 1931.	No. of occupied males, aged 14 up, 1931.	Proportion of these (per mille) in Social Class :—					Mean local adjusted rate per cent. of national rate in :—		Per cent. decline in S.D.R. since 1911-14.
			I.	II.	III.	IV.	V.	1911-14.	1931-34.	
	1	2	3	4	5	6	7	8	9	10
Bedfordshire	0.71	75,735	19	141	471	197	173	84	90	23
Berkshire	0.71	69,409	26	135	468	191	180	77	85	20
Buckinghamshire	0.71	93,664	30	149	505	158	159	78	86	21
Cambridgeshire	0.67	45,266	24	167	417	227	166	82	84	26
Cheshire	0.76	224,681	28	170	455	157	190	98	99	27
Cornwall	0.67	99,783	22	217	384	200	177	91	95	25
Cumberland	0.81	66,814	18	186	412	227	157	102	108	24
Derbyshire	0.84	212,100	14	116	493	239	138	95	100	24
Devonshire	0.67	141,574	28	227	414	187	144	84	89	23
Dorsetshire	0.70	78,678	26	153	441	212	167	79	87	20
Durham	1.15	306,517	10	70	459	313	148	116	116	28
Ely, Isle of	0.73	26,856	13	198	282	340	167	82	89	22
Essex	0.79	390,966	23	135	506	155	181	80	86	23
Gloucestershire	0.72	107,580	20	161	446	212	161	84	91	21
Herefordshire	0.72	35,692	21	229	341	263	146	85	94	20
Hertfordshire	0.72	130,714	36	145	509	134	176	76	84	20
Huntingdonshire	0.69	19,078	15	176	346	303	160	79	88	20
Kent	0.73	388,381	31	134	489	165	181	83	88	23
Lancashire	0.82	610,289	17	126	486	199	172	112	113	27
Leicestershire	0.75	102,749	16	148	484	236	117	86	91	23
Lincolnshire, Holland ..	0.75	31,458	14	208	271	384	124	85	87	27
" Kesteven ..	0.73	38,117	25	164	381	305	125	81	89	21
" Lindsey ..	0.73	88,943	16	185	342	275	182	83	91	20
London	0.98	1,461,041	27	106	530	126	211	108	106	29
Middlesex	0.80	545,465	38	157	562	93	149	81	88	22
Norfolk	0.69	107,999	17	174	324	334	152	78	83	23
Northamptonshire	0.71	75,260	15	135	513	209	128	82	87	23
Northumberland	1.03	136,029	21	114	451	305	109	100	105	24
Nottinghamshire	0.80	151,641	15	120	505	252	109	91	98	22
Oxfordshire	0.70	42,790	23	163	398	238	178	78	85	21
Peterborough, Soke of ..	0.71	17,834	18	134	482	202	163	85	95	19
Rutlandshire	0.68	5,866	18	177	351	315	139	80	87	21
Shropshire	0.79	82,333	19	184	383	257	157	86	96	19
Somersetshire	0.69	129,443	24	194	422	206	154	82	88	22
Southampton	0.71	164,593	30	112	423	280	156	77	86	20
Staffordshire	0.91	238,947	12	114	482	214	178	103	102	28
Suffolk, East	0.69	67,861	19	149	383	303	146	79	85	22
" West	0.70	35,779	17	150	353	332	149	83	87	24
Surrey	0.71	300,178	56	161	536	105	143	73	81	20
Sussex, East	0.67	82,705	40	171	465	167	158	76	86	18
" West	0.67	67,225	35	151	479	171	163	76	85	19
Warwickshire	0.76	122,694	24	152	465	218	142	86	91	23
Westmorland	0.71	20,972	25	263	379	190	144	85	104	12
Wight, Isle of	0.61	26,357	31	164	501	156	149	77	86	20
Wiltshire	0.74	105,478	21	130	438	259	151	80	89	20
Worcestershire	0.79	102,814	16	141	463	200	180	88	95	22
Yorkshire, East Riding ..	0.71	55,421	25	218	335	271	152	81	90	20
" North Riding ..	0.77	111,698	22	186	370	244	178	97	98	27
" West Riding ..	0.89	523,729	13	115	491	260	122	107	109	27
Anglesey	0.70	15,513	22	269	324	237	147	95	106	19
Brecknockshire	0.78	19,859	21	212	431	234	102	96	105	21
Caernarvonshire	0.68	39,067	28	198	402	257	114	103	109	23
Cardiganshire	0.65	16,664	30	378	292	196	105	100	108	22
Carmarthenshire	0.81	60,791	16	194	426	217	147	102	112	21
Denbighshire	0.82	52,872	22	172	430	239	137	99	107	22
Flintshire	0.80	37,018	23	164	439	162	212	100	102	26
Glamorganshire	0.85	262,622	15	84	534	257	110	106	119	19
Merionethshire	0.70	14,307	27	256	322	285	110	103	110	23
Monmouthshire	0.87	119,462	12	91	540	239	118	102	110	23
Montgomeryshire	0.73	16,125	19	363	258	246	114	88	101	17
Pembrokeshire	0.76	28,445	22	259	316	259	145	96	108	19
Radnorshire	0.68	7,165	24	380	257	235	104	82	89	22

ranged from 74 to 150 per cent. of the national mortality but by 1921–1924 the range had contracted to 83–140 and by 1931–1934 to 87–137. Since the effects of the climatic, racial and selective factors in producing the differences in mortality risks between the large towns cannot be supposed to have changed to any important

Table XCIX.—Distributions of Administrative Counties and County Boroughs according to standardized percentage mortality ratios.

	Administrative Counties.*		County Boroughs.*		
	1911–14.	1931–34.	1911–14.	1921–24.	1931–34.
73-	7	—	2	—	—
78-	17	1	2	—	—
83-	13	17	6	5	1
88-	4	15	—	10	8
93-	5	5	8	10	6
98-	8	7	10	8	11
103-	5	6	7	6	8
108-	2	8	3	6	8
113-	1	2	7	9	12
118-	—	1	16	12	10
123-	—	—	6	5	6
128-	—	—	5	7	6
133-	—	—	5	3	7
138-	—	—	2	2	—
143-	—	—	3	—	—
148-	—	—	1	—	—
Total ..	62	62	83	83	83

* As constituted in 1934.

extent in the interval, this narrowing of the range must be attributed in the main to the effects of public hygiene and amelioration of the conditions of life in the towns where mortality was worst in 1911–1914. In considering Table XCIX it must be remembered that the rates are expressed as percentages of a diminishing national rate, namely, 14·47 per 1,000 in 1911–1914, 10·97 in 1921–1924, and 9·72 in 1931–1934. The distributions of the 83 county boroughs according to their mean annual standardized death rates per 1,000 living, shown below, reveal the change in the amount of variation since 1911–1914 more clearly :—

<i>S.D.R.</i>	8-	9-	10-	11-	1-	13-	14-	15-	16-	17-	18-	19-	20-
1911-14	—	1	2	7	6	13	8	12	17	7	6	3	1
1931-34	10	21	17	19	12	4	—	—	—	—	—	—	—

Whilst 54 of the towns had rates of 14 per 1,000 and upwards 20 years previously, not one county borough gave an average rate as high as 14 for the 4 years 1931–1934, and whereas only one gave

a rate below 10 in 1911-1914 there were no less than 31 such in 1931-1934. The 8 towns giving the highest and lowest rates respectively in the three periods were, in descending order :—

Highest rates.

1911-14.	1921-24.	1931-34.
Middlesbrough.	Oldham.	Wigan.
Liverpool.	Middlesbrough.	Salford.
Wigan.	Wigan.	Oldham.
Stoke-on-Trent.	Burnley.	Bootle.
St. Helens.	Salford.	Liverpool.
Oldham.	Stoke.	Middlesbrough.
Bootle.	Sunderland.	South Shields.
Burnley.	South Shields.	Merthyr Tydfil.

Lowest rates.

1911-14.	1921-24.	1931-34.
Hastings.	Northampton.	Ipswich.
Oxford.	Norwich.	Canterbury.
Bath.	Bath.	Hastings.
Reading.	Oxford.	Croydon.
Croydon.	Canterbury.	Bournemouth.
Southend.	Reading.	Bath.
Eastbourne.	Ipswich.	Eastbourne.
Bournemouth.	Eastbourne.	Oxford.

In each period the 8 highest rates were found in the industrial towns of the North, or in South Wales, and the 8 lowest in towns of the South of England or Midlands. The favourable positions of Oxford, Ipswich and Northampton (which in 1931-1934 followed Ipswich in order) are examples of what it is possible to achieve in towns which are partly industrial. The rate for Oxford is slightly lowered by inclusion in the population at the 1931 census of university students, only a small proportion of whose deaths during a year would be credited to Oxford, but this factor cannot lower the index by more than 1 per cent. and after allowing for it Oxford still maintains a rate superior to Bournemouth or Hastings.

That the improvement in the chances of survival has been much greater in the less favourably circumstanced industrial towns during the last 20 years than in the more happily situated group can be seen from the percentage fall in the standardized death rates in column 15 of Table XCVII. The 8 northern towns which registered the highest mortality in 1911-1914, shown above, had in that period an average standardized death rate of 19·2 per 1,000, but in 1931-1934 their rate had fallen to 12·9, that is to say, by 33 per cent. On the other hand, for the 8 southerly towns which registered the lowest mortality in 1911-1914 the average standardized death rate declined from 10·9 to 8·8, that is to say, by 19 per cent. To express this change in another way, whereas 20 years ago the 8 towns with

highest mortality carried an average mortality risk 76 per cent. in excess of that in the 8 towns with lowest mortality, the contrast as thus measured is now only 47 per cent.

The percentage rate of decline in standardized mortality from 1911-1914 to 1931-1934 ranged from 13 for Bournemouth to 40 for Doncaster. The 7 towns which have registered 35 per cent. or more improvement are Doncaster, Middlesbrough, Walsall, Birmingham, Sheffield, St. Helens and Stoke, and those showing less than 20 per cent. improvement are Bournemouth, East Ham Southend, Eastbourne and Reading.

Relation between Mortality in the County Boroughs and Distribution of Social Classes, Housing Density and Situation, 1929-33.

The Review for 1932 (pp. 32-38) contained an analysis of mortality at various ages during 1930-1932 in the county boroughs and county aggregates of urban and rural districts when these were grouped according to the average density of persons per room in 1931 (Table XXVIII). Mortality at ages under 15 and over 65 was also analysed when the county boroughs were grouped according to two factors, geographical position by latitude and proportion of the population living at densities exceeding two per room (Table XXVII). It was evident that other factors were involved in producing the wide differences in the mortality rates of the towns, and it has now become possible to extract from the census data another index of the social conditions within each county borough and administrative county. In the Decennial Supplement for 1921, Part II, occupations were classified into five social groups denoted by I (upper and middle class), II (intermediate), III (skilled workers), IV (semi-skilled), V (unskilled workers), and a similar classification has been used for the purpose of the analysis of occupational mortality and fertility in 1930-1932. Table 16 of the Census of England and Wales 1931, "Occupation Tables," enumerates all males over 14 in the population of each county borough and administrative county who were described at the census as following each occupation, whether actually employed at the moment or not, and by assigning every occupation to the social class to which it has been assigned it is possible to calculate the proportionate distribution per 1,000 of all occupied males over 14 years of age according to social class in each town and county. These distributions of the total population of all males over 14 are given in columns (3)-(8) of Table XCVII, and although they refer only to males over 14 they provide a good indication of the relative social grading of the entire population of the area concerned. It must be emphasised that no account is taken of the degree of unemployment at the time, the classification being based upon the usual occupations of the male population.

The proportion per 1,000 in class V ranges from 113 in Southend-on-Sea to 362 in Bootle, and the proportion in classes IV and V combined ranges from 196 in Southend to 520 in Grimsby, amongst

the county boroughs. Either of these proportions might be conveniently used as an index of social distribution but the best single figure by which to express the average social grading of local populations at a given time is probably the latter, and this index (per unit) is denoted below by S. In order to obtain a measure of standardized mortality which is not greatly influenced by accidental annual fluctuations the average crude death rate in the five years 1929–1933 has been multiplied by the comparability factor for the county borough in question and divided by the average crude death rate of England and Wales in the same years, giving the standardized ratio (or ratio of adjusted to national death rate) shown in column (9) of Table XCVII. The correlations between the following factors :—

M=standardized mortality ratio 1929–33,
 L=latitude zone in which the town is situated,
 H=housing density index, or mean number of persons per room,
 S=social index, or proportion (per unit) of males over 14 years of age whose occupation places them in social classes IV and V,
 have been evaluated by treating the 83 towns as units and the values of the correlation coefficients with their probable errors are :—

		Crude Correlation Coefficient.	Co-efficient when other two factors are constant.
Mortality with latitude	r_{ML}	$\cdot 651 \pm \cdot 053$	$\cdot 375 \pm \cdot 064$
Mortality with housing index	r_{MH}	$\cdot 771 \pm \cdot 030$	$\cdot 510 \pm \cdot 055$
Mortality with social index	r_{MS}	$\cdot 685 \pm \cdot 039$	$\cdot 290 \pm \cdot 068$
Latitude with housing index	r_{LH}	$\cdot 549 \pm \cdot 052$	—
Latitude with social index	r_{LS}	$\cdot 519 \pm \cdot 054$	—
Housing index with social index	r_{HS}	$\cdot 669 \pm \cdot 041$	—

When each town is weighted in proportion to its population the first three coefficients are slightly modified to $\cdot 72$, $\cdot 70$ and $\cdot 67$ respectively. The three factors evidently have about the same degree of association with mortality.

The calculation of the second order coefficients is based on the assumption that the correlation between the various factors is of a simple linear character, that is to say, that the relations between them would be represented graphically by straight lines. The correlation tables do not suggest that this assumption is wide of the truth. For none of these factors does the correlation disappear when the effect of the other two has been eliminated, notwithstanding the high degree of correlation between the three factors themselves. Each factor still reveals an independent correlation with mortality of the order $\cdot 3$ to $\cdot 5$, the housing index retaining a correlation as high as $\cdot 51$. Although the housing and social indices are to a large extent alternative measures of the material well-being of the population, as shown by their high inter-correlation of $\cdot 67$, it is evident that they also comprise some factors which are distinct

and different, and, therefore, fairly high residual correlations with mortality remain in each instance after the other factor has been made constant.

In Table C the county boroughs have been distributed according to latitude on the one hand and according to housing density on the

Table C.—Proportion, per 1,000 Occupied Males over 14 years of Age, in social classes IV and V (and, in italics, in Class V) in the County Boroughs, distributed according to Latitude and Average Density of Persons per Room (1931).

Persons per room.	Degrees of North Latitude.						
	50°—	51°—	52°—	53°—	54°—	55°—	All lati- tudes.
·55—	214 <i>130</i>	261 <i>161</i>	314 <i>163</i>	239 <i>140</i>	— —	— —	274 <i>152</i>
·70—	292 <i>184</i>	293 <i>189</i>	328 <i>169</i>	362 <i>200</i>	— —	— —	320 <i>181</i>
·85—	283 <i>188</i>	370 <i>229</i>	353 <i>159</i>	388 <i>227</i>	373 <i>216</i>	— —	380 <i>221</i>
1·00—	— —	483 <i>340</i>	379 <i>218</i>	421 <i>189</i>	426 <i>272</i>	422 <i>236</i>	431 <i>250</i>
1·15—	— —	— —	— —	— —	422 <i>221</i>	— —	422 <i>221</i>
All densities ..	279 <i>178</i>	346 <i>224</i>	332 <i>169</i>	384 <i>219</i>	415 <i>243</i>	422 <i>236</i>	362 <i>208</i>

other, and the proportion of the aggregated male populations of each group who were in classes IV and V at the census is shown and also the proportion in class V only. With increasing density per room the proportion in classes IV and V per 1,000 males rises from 274 for the towns with less than ·7 per room to about 430 in the towns with average densities exceeding 1 per room. As one passes northwards the proportion rises from 279 in the most southerly towns to about 400 in the industrial North. The northward increase is much less evident, however, within any group of towns of similar housing density as may be seen by following the numbers along each horizontal line. On the other hand, the increase with housing density remains very pronounced for towns of similar latitude as may be seen by following the numbers down each vertical column.

Table CI shows the percentage standardized mortality ratios for the county boroughs when distributed in the same way as in Table C. Table CII gives the mortality ratios for the northern and

southern county boroughs (using 53 degrees N. as dividing line) when grouped according to their housing density on the one hand, and according to the social index S on the other. By following the

Table CI.—Ratio of Adjusted to National Death rate (standardized mortality ratio) in 1929–33 in the County Boroughs distributed according to Latitude and Average Density of Persons per Room.

Persons per room.	Degrees of North Latitude.						
	50°–	51°–	52°–	53°–	54°–	55°–	All lati- tudes.
.55– .. ..	.85	.84	.98	1.03	—	—	.95
.70– .. ..	.97	.92	1.04	1.07	—	—	1.01
.85–	1.08	1.08	1.05	1.23	1.08	—	1.19
1.00–	—	1.09	1.18	1.29	1.24	1.12	1.22
1.15–	—	—	—	—	1.29	—	1.29
All densities ..	.97	1.00	1.04	1.21	1.23	1.12	1.13

ratios along each horizontal line it is perceived that the dependence of mortality upon the social class distribution is not so evident when the effects of northerliness and housing density have thus been

Table CII.—Ratio of Adjusted to National Death rate (standardized mortality ratio) in 1929–33 in (a) Northern and (b) Southern County Boroughs distributed according to the Proportion of their Male population in Social Classes IV and V, and according to their Average Density per room in 1931.

Persons per room.	Per mille of occupied males aged 14 and up in social classes IV and V at census of 1931.					
	140–	220–	300–	380–	460–	All groups.
(a) County boroughs north of latitude 53° N.						
.55– .. ..	.97	1.08	—	—	—	1.03
.70–	—	.96	1.10	1.07	1.10	1.07
.85–	—	—	1.23	1.22	1.22	1.22
1.00–	—	—	—	1.24	1.32	1.26
1.15–	—	—	—	1.29	—	1.29
(b) County boroughs south of latitude 53° N.						
.55– .. ..	.86	.96	.88	.95	—	.93
.70– .. ..	.89	.95	1.02	1.02	—	1.00
.85–	—	1.08	1.05	1.14	—	1.07
1.00–	—	—	1.15	1.22	1.09	1.12

almost eliminated. When the ratios are followed down each vertical column, however, an increase in mortality accompanies an increase in housing density in fourteen instances out of sixteen, and the association remains very evident even after eliminating in this rough manner most of the effects of the differing situations of the towns and differing occupations of their populations. The evidence furnished by the correlation coefficients also supports the conclusion that high housing density is a factor which unfavourably affects the mortality in a town even after allowing for the social grouping based upon occupations which is inevitably bound up with housing conditions.

From the correlation coefficients given above it is possible to calculate a regression formula by means of which one can estimate the standardized mortality ratio to be expected in a county borough after taking into account its northerliness, the distribution of its population by sex, age and social class, and the density at which the population is housed. This formula is as follows:—

$$M = .48 H + .45 S + .033 L' + .447$$

where H = mean number of persons per room, S = proportion in social classes IV and V of all occupied males over 14 and L' is the number of degrees of latitude in excess of 50 degrees North (omitting all fractions of a degree). The standardized ratios of local to national mortality which would be expected on the basis of this formula are given in column (10) of Table XCVII and the mortality actually observed is expressed as a percentage of this calculated mortality in column (11). The variations from town to town which still remain may be regarded as having considerably greater significance from the point of view of hygiene and preventability than had the much wider variations in the original standardized ratios in Table III. The range of variation which remains after thus correcting for housing density, social classification and geographical situation, is shown below.

				Adjusted mortality ratio (per cent. of national).	Mortality per cent. of that calculated by regression formula.
83—	..	..	..	4	1
88—	..	..	..	6	11
93—	..	..	..	9	22
98—	..	..	..	8	19
103—	..	..	..	7	16
108—	..	..	..	13	9
113—	..	..	..	8	4
118—	..	..	..	10	1
123—	..	..	..	7	—
128—	..	..	..	7	—
133—	..	..	..	3	—
138—142	..	..	..	1	—
Total				83	83

The variance, or square of the standard deviation, of the percentage mortality ratios of the county boroughs has been reduced from 194 to 52 by the process of correcting for the three factors, and the corrected mortality indices now range from 85 for Tynemouth and 88 for Darlington, York and West Ham to 115 for Manchester, 117 for Merthyr Tydfil and 121 for Oldham. The first ten and last ten county boroughs when arranged in descending order of the corrected index are :—

<i>Highest.</i>		<i>Lowest.</i>	
Oldham	(121)	Carlisle	(92)
Merthyr Tydfil	(117)	Newcastle	(92)
Manchester	(115)	Gateshead	(91)
Burnley	(113)	Bath	(90)
Salford	(113)	East Ham	(89)
Rochdale	(112)	Ipswich	(89)
Wigan	(112)	Darlington	(88)
Portsmouth	(111)	York	(88)
Blackpool	(110)	West Ham	(88)
Liverpool	(110)	Tynemouth	(85)

It is noteworthy that after thus making the calculated allowance for the combination of factors known to have an unfavourable influence upon their mortality rates the Northumberland and Durham towns occupy a more favourable position than do the Lancashire towns. A tendency to geographical grouping in the corrected mortality indices is shown by such facts as these :— (1) the ports and seaside towns in the western half of England and Wales, including the South Coast towns westward from Southampton, have mostly indices over 100 whilst those in the eastern half have mostly indices under 100; (2) the bulk of the Lancashire and West Riding towns have indices over 100; (3) the towns in the South-East quadrant of England all have indices under 100. In this connection it should be remembered that whilst correction for latitude has been made, any gradient of mortality which there may be from East to West remains unaffected by such correction. It would seem that such a gradient probably does exist even after allowing for the effects of the distribution of industry, and it may be that differing rainfall is here concerned. Furthermore, no account has been taken of the employment of women in industry and this may affect the mortalities of the Lancashire and West Riding towns unfavourably.

Relation between Mortality in the Administrative Counties and Distribution of Social Classes, 1931–1934.

Table XCVIII gives in columns (3) to (7) the distribution of occupied males at ages over 14 in the five social classes at the 1931 Census, and in column (9) the standardized percentage mortality ratio, or mean adjusted death rate per cent. of the national rate, in 1931–1934 for each administrative county. The proportion in

classes IV and V per 1,000 in all classes ranges from 242 in Middlesex to 508 in the Holland division of Lincolnshire. The 9 counties with highest proportions are, in descending order, Lincolnshire (Holland), Isle of Ely, Norfolk, Suffolk West, Huntingdon, Durham, Lincolnshire (Lindsey), Rutland and Suffolk East. With the exception of Durham these comprise an eastern group of agricultural counties having high proportions of agricultural labourers in their population, and since that occupation is placed in social class IV but is nevertheless characterised by a very low mortality it is not surprising to find that the average standardized ratio for the 9 counties is as low as 90 compared with the average for all counties of 95.

The 9 counties with lowest proportions in social classes IV and V are, in descending order, Devon, Sussex East, Buckingham, Isle of Wight, Hertford, Cardigan, Nottingham, Surrey and Middlesex, and these also have a mean mortality ratio of 90. It is evident that the administrative counties do not exhibit any such general relation between the social distribution of their populations and mortality as was found for the county boroughs. The correlation between a social classification based on occupations and mortality is a phenomenon characteristic of town dwellers and in mixed populations consisting of dwellers in rural districts and small towns it is not clearly seen.

Comparison of Mortality at various Ages in England and Wales, Scotland, Canada, South Africa and several Foreign Countries.

Table CIII compares the infant mortality rates per 100,000 live births, mean death rates per 100,000 living at 1-4 and 75 upwards, and equivalent average death rates at 5-34, 35-64 and 65-74 in 1930-32 for England and Wales and 10 other countries, and also in Germany in 1933 and England and Wales in 1934. The rates for Scotland, Italy and Germany have been calculated from the official life tables and those for the other countries by aggregating the deaths in the triennium and dividing by the estimated mean population at the same age, the latter being obtained by distributing the total estimated mean population in 1930-32 in the same proportions by age as were recorded at the Census of 1930 or 1931. The equivalent average death rates are the simple averages of the death rates at quinquennial age groups between the limits of age named, and are therefore corrected for differences in age distribution between the populations, being equivalent to death rates standardized on a hypothetical standard population consisting of equal numbers of males or of females at each age within the specified limits (see p. 2).

The lowest infant mortality rates in 1930-32 were in Norway (males 52, females 40), and next in order were Holland (55, 42), Sweden (61, 47), England and Wales (72, 55), South Africa (73, 59), Finland (80, 67), Canada (92, 73), Scotland (93, 73), Italy (115, 102), Portugal (151, 135).

At the pre-school period 1-4 years, Norway again had the lowest rates, followed in order by Sweden, Holland, Canada, England and Wales, South Africa, Finland, Scotland, Hungary, Italy,

Table CIII.—Death-rates at 0-1, 1-4 and over 75 years, and equivalent average death-rates at 5-34, 35-64 and 65-74, in various Countries, 1930-32 (and in Germany, 1933) compared with England and Wales.

		0-1 years per 100,000 live births.	1-4 per 100,000 living.	5-34	35-64	65-74	75 and over per 100,000 living.
				Equivalent average rates per 100,000 living.*			
MALES.							
England & Wales	1930-32	7,186	755	276	1,365	6,047	14,986
"	1934	6,537	691	263	1,331	5,849	14,139
Scotland ..	1930-32	9,346	1,025	303	1,453	6,352	15,971
Canada ..	"	9,157	658	277	1,106	4,656	12,523
South Africa ..	"	7,332	768	286	1,450	5,299	12,994
Finland ..	"	8,001	849	551	1,710	5,696	11,222
Holland ..	"	5,503	527	198	949	4,765	13,180
Hungary ..	"	?	1,554	464	1,514	6,006	15,974
Italy ..	"	11,532	1,664	355	1,285	5,400	14,978
Norway ..	"	5,194	348	351	1,034	4,025	12,336
Portugal ..	"	15,129	2,375	478	1,575	6,006	15,638
Sweden ..	"	6,100	406	302	1,063	4,398	12,989
Germany ..	1933	8,499	502	244	1,213	5,548	15,427
<i>England & Wales :</i>							
Rural districts, 1930-32		—	—	254	1,088	5,079	14,235
FEMALES.							
England & Wales	1930-32	5,455	677	250	1,005	4,467	12,866
"	1934	5,144	626	245	953	4,395	11,999
Scotland ..	1930-32	7,304	954	290	1,170	4,904	14,027
Canada ..	"	7,300	579	281	1,008	4,095	12,113
South Africa ..	"	5,858	755	244	1,036	4,375	11,700
Finland ..	"	6,699	811	489	1,105	4,462	11,615
Holland ..	"	4,246	446	192	945	4,495	12,678
Hungary ..	"	?	1,504	485	1,254	5,418	15,031
Italy ..	"	10,225	1,653	349	1,034	4,752	14,102
Norway ..	"	4,023	308	299	860	3,432	11,604
Portugal ..	"	13,543	2,328	418	1,030	4,450	14,122
Sweden ..	"	4,676	384	292	942	4,036	12,727
Germany ..	1933	6,766	439	217	1,011	4,938	14,537
<i>England & Wales :</i>							
Rural districts, 1930-32		—	—	236	921	4,067	12,563

* See page 2.

Portugal. The Norwegian rates were less than half those in England and Wales, and the Swedish rates little more than half, and these facts go to support the conclusion reached from recent studies of

the association between mortality at this age and overcrowding, that a large reduction of the mortality of these young children below the present level in England and Wales is still possible of achievement by the mitigation of environmental evils.

For males of the school and young adult ages 5–34 years, Holland had the lowest rate, England and Wales and Canada sharing second place, and then in order South Africa, Sweden, Scotland, Norway, Italy, Hungary, Portugal, Finland. For females of the same ages the order was Holland, South Africa, England and Wales, Canada, Scotland, Sweden, Norway, Italy, Portugal, Hungary, Finland.

At 35–64 Holland again had the lowest rate for males, followed by Norway, Sweden, Canada, Italy, England and Wales, South Africa, Scotland, Hungary, Portugal, Finland. For women Norway with the lowest rate was followed by Sweden, Holland, England and Wales, Canada, Portugal, Italy, South Africa, Finland, Scotland, Hungary.

At 65–74 Norway had the lowest mortality for each sex, England and Wales being 10th in order for men and 7th in order for women, whilst at ages 75 upwards, Finland had the lowest rates, England and Wales being 8th in order for men and 7th for women. The much lower mortality levels at 65–74 in Norway and Sweden throw doubts on the prevalent belief that little or no improvement in death rates at ages over 65 can be looked for in the future in England and Wales. It is true that the Scandinavian rates at ages over 50 have for long compared very favourably with this country, where the “stress of civilisation” doubtless takes a greater toll. Norway and Sweden are more rural in character, but male mortality at 65–74 in the rural districts of England and Wales in 1930–32 was 26 per cent. in excess of the rate for Norway as a whole, 15 per cent. in excess of the Swedish national rate and 7 per cent. above that of Holland. The corresponding rural rate for females was also in excess of the national rates of the first two countries.

Both in 1930–32 and 1934 England and Wales registered lower infant mortality rates than did Germany in 1933, but at each subsequent age period up to 75 for males, and at 1–4 and 5–34 for females, the German death rates were lower. At 5–34 the German rates in 1933 were below those of any country in the table in 1930–32, except Holland.

Medical Certification.

Information bearing upon the extent to which death registration and burial take place on the strength of the certificate of a medical attendant who has actually seen the body after death has appeared under the above title in each text portion of the Statistical Review since 1928 inclusive. For a full statement of the aspects of certification affecting this matter, reference should be made to the 1928 section when the records were examined in some detail or to the quinquennial repetition of the full enquiry made last year (1933).

According to present intention the next complete analysis will fall due in 1938, the intermediate years' records being limited to a simple summary of the cases in which the body was or was not seen after death without reference to date or place of death or to the time which had elapsed since the deceased was last seen by a medical attendant.

The appropriate summary of the deaths registered in 1934 is shown in the following table:—

Summary of Certification of Deaths registered during the Year 1934.

—	Registered Medical Practitioner.	Inquest or Coroner's P.M. without Inquest.	Other Cases reviewed by Coroner.	Total Deaths Registered.	
				Number.	Percentage
(1)	(2)	(3)	(4)	(5)	(6)
Seen after death ..	214,045	41,581	4,736	260,362	54·6
Not seen after death	216,448	—	—	216,448	45·4
	430,493	41,581	4,736	476,810	100·0

NOTE—(1) All deaths subject to inquest or port-mortem by coroner are shown in column 3; of all other deaths, those certified by a registered medical practitioner are shown in column 2 (whether they were referred to a coroner or not), and those not certified by a registered medical practitioner (which are automatically referred to a coroner) are shown in column 4.

(2) Cases in which no statement was forthcoming as to whether they were or were not seen after death have been included with the "not seen" if they were not referred to a coroner. They amounted to 1·5 per 1,000 of the total deaths registered in 1934.

The above statement shows that in 1934 the proportion of "seen" cases was 54·6 per cent. of the total deaths registered, the position in this respect having improved more or less steadily and continuously from the figure of 51·0 per cent. recorded in 1928.

Of the apparently large numbers returned as "not seen," the vast majority of the deceased persons were, of course, seen alive by the medical attendant on the day of death or within a very short period before death. From the full examination made last year it was shown that if the numbers seen within one day of death were added to those seen after death, as conforming to a standard which satisfies reasonable requirements, they would embrace 93·1 per cent. of the total deaths, while if those seen within two days of death were added the proportion would be increased to 96·6 per cent., both percentages showing an advance over the corresponding 1928 figures.

POPULATION.

The total population of England and Wales as at the 30th June, 1934, has been estimated at 40,467,000 persons, 19,412,000 being males and 21,055,000 females.

The current year's total is 117,000 in excess of the corresponding mid-1933 estimate and represents an estimated rate of growth of 0·29 per cent. per annum during the past year, a figure which may be compared with the 10-year increases of 5·53 per cent. and 4·93 per cent. recorded in respect of the decennia 1921–31 and 1911–21 respectively. (*See General Tables Volume Census, 1931, Table I.*)

The method adopted in arriving at the current estimates is that which has been used with apparent success in past periods and consists of taking the 1931 Census as a starting point, adding the births and immigrants and deducting deaths and emigrants between the date of the Census and the 30th June, 1934. Of the elements entering into the computation, the records of births and deaths are believed to be precise and complete, so that such estimation error as may be inherent in the final result may be regarded as attaching almost wholly to the allowances included in respect of migration. For the latter, recourse is had to the statistics of migration periodically compiled by the Board of Trade and to departmental records of the movements of the Defence Forces; these are incomplete however, in that they afford no guide to the passenger traffic between the several countries of the United Kingdom nor to the possible effect on the home population of changes in the personnel of the mercantile marine, the allowance for which is a matter of judgment based upon past experience qualified as may seem to be required by current conditions. The error to which the population estimates are subject is one which may be expected to grow in degree as the preceding census becomes more remote.

The mid-1934 population estimate of 40,467,000 is some 515,000 in excess of the 1931 census figure, of which excess about 365,000 may be assigned to natural increase, leaving 150,000 to be ascribed to the miscellaneous movements summed up in the term migration. It is of interest to observe (from Part II of the Statistical Review Table S) that the net balance of migration which for several decades has, on the whole, been consistently outward in character, appears since about 1930, to have shown a definite inward tendency, thus affording some numerical compensation for the lowness of the level to which the numbers of births have fallen.

Age Distribution.—The estimated sex-age distribution of the national population, shown in Table 1 of Part I of the Tables section of this volume, has been obtained from the corresponding 1933 distribution by the survivorship method customarily adopted for the purpose; this briefly consists of (1) obtaining the year's deaths arising from the population at each age in 1933, and treating the survivors as the population at the next higher age in 1934, (2) completing the table by the addition of the

population aged 0–1, represented by the survivors at the middle of 1934 of the births occurring between the middle of 1933 and the middle of 1934, and (3) adjusting the results of these two operations in respect of the balance of population movement in accordance with such age statistics as are available in respect thereof.

The average ages of the mid-1934 population according to the estimated age distribution are 32·4 and 34·2 for males and females respectively, figures which compare with averages of 31·8 and 33·5 in 1931 or 29·9 and 31·2 in 1921.

Local Populations.—The 1934 estimates of the populations of all Boroughs, Urban Districts and Rural Districts in England and Wales are shown in Table 17 of Part I and Table E of Part II of the Tables section of the current Annual Review.

As for the country as a whole, so for each of the component areas within the country the present mid-year estimate has been obtained by estimating the local movement which has taken place since the date of the 1931 census and modifying the 1931 position in respect of such movement. It may be mentioned that the local estimates purport to represent the resident populations of the several areas and are, in this respect, different from census populations as generally understood in this country, which consist simply of the persons enumerated in the several areas on census night, whether resident in the area of enumeration or not.

The principles and procedure governing the identification of the basic 1931 resident population and the estimation of the changes in that population which have taken place since 1931 are similar in all general respects to those adopted for the purpose of the 1932 estimates and for their fuller discussion reference may be made to the population section of the text portion of the Annual Review for 1932.

Non-Civilian Populations.—The merging of non-civilian and civilian deaths in the local mortality records from 1932 onwards has rendered unnecessary the identification of civilian apart from total populations, and the former, shown prior to 1932 in footnotes to Tables 17 and E, are accordingly now omitted.

Institutions.—In the Census classification of population according to residence, the populations of institutions, *e.g.*, Public Assistance Institutions, Infirmarys, Hospitals, Mental Institutions, etc., were dispersed to their home areas where it was anticipated that they would be discharged within a period of six months; otherwise they were retained in the Institution area. This convention is reflected in the current population estimates but is not precisely identical with the procedure in the areal classification of deaths where it is customary to transfer all institution deaths to former area of residence (if known) irrespectively of the time spent in the Institution.

Local Age Distributions.—Sex and age distributions for large geographical regions of the country, which formerly appeared in the text portion of the Review, are now shown in Table 2 of Part I. The populations at ages under five were obtained by the survivorship method (*see* page 160), and for later ages the predetermined total populations, obtained as described in the preceding section, were distributed in accordance with the recent census age and sex distribution of the unit, the resulting figures being thereafter modified to allow for the slight change between the date of the Census and the middle of the year 1934 in the age distribution of the total population of the country.

United Kingdom and Irish Free State.—The populations of each of the countries of the United Kingdom and of the Irish Free State, as estimated by their respective Registrars-General, are shown for each year from 1895 in Table A.

MARRIAGES.

The marriages registered in England and Wales during the year 1934 numbered 342,307, corresponding to a rate of 16·9 persons married per 1,000 of the population of all ages and conditions. The number so registered is 24,116, or 7·58 per cent. more than the number registered in 1933, and apart from the year 1915 and the years immediately following the war, 1919 and 1920, is the largest number in any year since the commencement of civil registration in 1837. The rate of 16·9 in 1934 is noteworthy in being considerably higher than any of the rates recorded in the years 1922 to 1933, during which they fluctuated from 14·3 to 15·8, about a mean of 15·4. (*See* Tables B and C.)

The preference for the third quarter, noticeable in the records since the beginning of the present century, was maintained in 1934, the marriages in this period being 31·9 per cent. of the total, while the fourth, formerly the outstanding favourite, ranks second out of the four. The rate for the first quarter, 11·8 persons married per 1,000 population, shows a material increase over the rate for the first quarter of 1933, 8·9, and approximates to the rates of 40 or 50 years ago. The proportion of marriages contracted in the first quarter was only 17·2 per cent. of the total.

In the following table (CIV) the marriages of a series of years are compared with the unmarried population at all ages over 15. By eliminating the progressively falling proportion of children under 15 from the population at risk, the rates of recent years are scaled down slightly in relation to those of earlier periods, but the principal interest of the table is in showing the difference in the course of the rates as between the two sexes. The actual difference between the male and female ratios is of course due to the inequality of the numbers of unmarried men and women in the population, and since the former have always been in a

minority—which has been unduly exaggerated as a result of the war—it is their numbers which primarily determine the marriageability of the population, so that, from one point of view, the male ratios may be regarded as providing the better indexes to the variations which have occurred from time to time in the incidence of marriage. In Table C (Part II), the series is taken back to 1894.

Table CIV.—Annual Number of Marriages of Men and Women per 1,000 Unmarried Population of each Sex aged 15 and over, 1871–1934.

NOTE.—For the census years 1871 to 1931 the annual numbers of marriages have been taken as the average of the three years about each census. From 1920 the rates for individual years are shown.

Year.			Bachelors, Widowers, Spinsters and Widows.	Bachelors and Widowers.	Spinsters and Widows.
1871	..	..	57·2	62·3	52·9
1881	..	..	51·5	56·0	47·6
1891	..	..	49·8	54·6	45·7
1901	..	..	48·7	53·5	44·7
1911	..	..	46·3	50·8	42·5
1921	..	..	54·1	62·7	47·6
1931	..	..	46·7	53·3	41·5
1920	..	..	61·7	71·5	54·7
1921	..	..	52·1	60·4	45·8
1922	..	..	48·2	55·8	42·5
1923	..	..	46·6	53·9	41·1
1924	..	..	46·6	53·6	41·2
1925	..	..	46·2	53·3	40·9
1926	..	..	43·4	50·0	38·3
1927	..	..	47·5	54·8	41·9
1928	..	..	46·4	53·7	40·9
1929	..	..	47·7	55·2	41·9
1930	..	..	47·8	55·6	42·0
1931	..	..	46·8	53·4	41·6
1932	..	..	46·1	52·6	41·1
1933	..	..	48·1	54·9	42·8
1934	..	..	52·2	59·6	46·4

Fluctuations of the general Marriage-rate in different Sections of the Country.—In Table CV comparison is made of the year's marriages and marriage-rates in large geographical sections of the country, and an analysis of the rates in regions and counties is shown in Table F.

The determination of marriage-rates for localities is not wholly satisfactory. In a large proportion of cases the district of registration is the district of residence of only one of the parties and in some

cases of neither. This difficulty, however, is probably of less moment in comparisons between large sections of the country than between smaller adjacent localities.

Among males, the highest frequencies occur in Midland I and North III. Among females the highest places are occupied by Wales I and North I. The lowest frequency, for both males and females, is recorded in Wales II.

Table CV.—Marriage-rate per 1,000 Unmarried Population aged 15 and over in Geographical Sections of the Country.*—1933 and 1934.

Area.	Ratio of un-married males per 1,000 un-married females aged 15 and over (Census 1931).	Rate per 1,000 Unmarried Population aged 15 and over.				Ratio of local rate to England and Wales rate (taken as 1,000).			
		1933.		1934.		1933.		1934.	
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
England and Wales.	778	54·9	42·8	59·6	46·4	1,000	1,000	1,000	1,000
South-East ..	711	56·3	40·2	60·9	43·4	1,026	939	1,022	935
North ..	796	55·1	44·0	59·7	47·6	1,004	1,028	1,002	1,026
North I ..	959	54·1	52·1	57·3	55·1	985	1,217	961	1,188
North II ..	866	48·1	41·9	52·4	45·4	876	979	879	978
North III ..	794	57·9	46·2	62·2	49·5	1,055	1,079	1,044	1,067
North IV ..	736	55·5	41·0	60·8	44·9	1,011	958	1,020	968
Midland ..	807	56·3	45·6	62·4	50·5	1,026	1,065	1,047	1,088
Midland I ..	797	55·9	44·7	62·8	50·2	1,018	1,044	1,054	1,082
Midland II ..	826	57·1	47·3	61·6	51·0	1,040	1,105	1,034	1,099
East ..	878	50·6	44·6	54·9	48·3	922	1,042	921	1,041
South-West ..	743	51·5	38·4	54·7	40·8	938	897	918	879
Wales ..	986	49·0	48·5	52·4	51·8	893	1,133	879	1,116
Wales I ..	1,060	51·5	54·9	54·7	58·1	938	1,283	918	1,252
Wales II ..	833	42·3	35·4	46·6	38·9	770	827	782	838

* For the constitution of the several sections, *see* page 13.

From the analysis in Table F it will be seen that, among the counties there compared, the 1934 marriage-rate is highest in London, where it exceeds the mean for the country by 20·7 per cent., followed in order by Staffordshire, Warwickshire and Lancashire, with excesses ranging from 2·4 to 8·3 per cent. The lowest rates occur in Wales where the counties of Cardigan, Montgomery and Radnor all return lower rates than any among the English counties.

The City of London returns a rate nearly five times as high as the average, and of the Metropolitan Boroughs several have high rates, notably Holborn and Westminster, where rates more than twice the average are found. Such rates give support to the belief that many persons who usually live in the provinces or abroad come to London to be married. At the census of 1931 these three areas returned higher proportions of population living in hotels, boarding-houses, etc., than any of the other

Metropolitan Boroughs. Only three of the Metropolitan Boroughs—Bethnal Green, Lewisham and Stoke Newington—have rates which are lower than the average for England and Wales. Among the county boroughs distinguished, the highest rates occur in West Bromwich, Reading and Oldham, and the lowest in Oxford, Barrow-in-Furness and Southampton.

Marriage rates by ages, which provide a more exact statement of the incidence and intensity of marriage than the aggregate rates just considered, are shown in Table CVI. The rates for 1871 to 1931, being based on enumerated populations, are liable to rather smaller errors than those for 1932 to 1934 which are based on post-censal estimates of population.

It will be observed from the last column of Table CVI, which compares the actual marriages of each year with a standard number, viz., those expected according to the age rates of 1921, and which makes allowance, therefore, for the changing age constitution of the unmarried population, that of the four sections distinguished, bachelors, widowers, spinsters and widows, the 1934 frequencies are lower than those of 1921, except that for spinsters, the percentages to the 1921 frequencies being, in order, spinsters 108·0, bachelors 89·0, widowers 86·5 and widows 72·7. On this basis of comparison the marriage frequency among bachelors is higher than in 1891 but lower than in previous years; that for widowers lies between the ratios of 1901 and 1911; that for spinsters lies between the ratios of 1871 and 1881; while that for widows is higher than in 1932 and 1933 but lower than in any of the earlier years shown in the table.

From the age analysis shown in the earlier columns of Table CVI, it will be seen that the 1934 rates for all four sections have decreased as compared with those for 1921 in all age-groups from 20 to 55 (except for spinsters, aged 20–35), and that the decrease among bachelors, widowers and widows is continued into the final group, age 55 and over. The only noteworthy increase occurs among spinsters under 35 years of age. The maintenance of the marriage-rate of young spinsters at a point well in excess of the corresponding rates of pre-war years has been a feature of the returns of recent years. With both bachelors and spinsters, the rates for the age period 25–35, at which practically one-half and one-third respectively of the marriages of these classes take place, are higher than those of any pre-war year shown in the table, while for bachelors the excess extends to all higher ages. For both classes the rates show an increase over those of 1933 at all ages under 55 years.

Widowers' and widows' rates as compared with 1921 show a consistent fall in all the age divisions identified except widows at 15–20 where the numbers are insignificant. Widowers' rates are largely in excess of the corresponding bachelors' rates, except under 20 years of age, so that it may be said that re-marriages in

Table CVI. — Annual Marriage-rate per 1,000 Bachelors, Widowers, Spinsters and Widows respectively at each of several Age Periods, 1871–1934.

NOTE.—Prior to 1921 the annual numbers of marriages have been taken as the average of the three years about each Census.

Year.	Annual marriage-rate per 1,000 in each age group.						Marriage-rate per 1,000 population over 15 in each class.	Ratio to corresponding rate for 1921.	Marriage-rate which would have resulted had the 1921 age rates been in operation.	Ratio of actual marriage rate (Col. 8) to rate in previous column (10).
	15—	20—	25—	35—	45—	55 and over.				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
BACHELORS.										
1871 ..	6.0	122.4	119.3	43.3	15.3	3.2	61.7	987	62.3	990
1881 ..	4.6	106.8	112.4	40.5	14.3	3.0	55.7	891	62.4	893
1891 ..	3.1	94.7	122.4	43.4	15.2	3.5	54.8	877	63.8	859
1901 ..	2.5	85.9	123.7	44.2	14.6	3.3	54.7	875	66.6	821
1911 ..	2.2	74.8	120.6	44.4	14.9	3.9	52.6	842	69.2	760
1921 ..	3.4	94.4	161.1	61.6	19.7	5.5	62.5	1,000	62.5	1,000
1931 ..	3.3	72.3	140.3	52.7	18.1	5.7	56.2	899	67.7	830
1932 ..	3.4	69.7	136.9	51.1	16.9	5.2	55.5	888	68.7	808
1933 ..	3.4	70.4	142.2	51.3	18.3	5.4	58.2	931	70.2	829
1934 ..	3.6	75.0	153.2	54.7	19.0	5.4	63.7	1,019	71.6	890
WIDOWERS.										
1871 ..	11.5	229.0	288.5	181.5	88.3	15.9	65.8	1,475	56.0	1,175
1881 ..	30.6	192.9	246.5	157.8	76.9	16.0	58.2	1,305	56.0	1,039
1891 ..	14.1	153.4	231.7	151.1	74.7	15.5	53.4	1,197	53.7	994
1901 ..	—	132.6	201.7	134.1	65.3	13.5	44.4	996	51.0	871
1911 ..	—	121.6	171.2	117.9	59.4	12.7	36.9	827	47.4	778
1921 ..	14.3	163.7	229.3	155.2	73.5	15.8	44.6	1,000	44.6	1,000
1931 ..	62.5	98.1	179.8	122.3	65.4	14.8	33.1	742	38.5	860
1932 ..	—	103.9	177.6	124.3	62.7	14.0	31.8	713	38.1	835
1933 ..	—	95.3	177.2	125.6	64.9	14.2	31.9	715	37.6	848
1934 ..	—	96.5	181.9	128.1	66.7	14.3	32.1	720	37.1	865
SPINSTERS.										
1871 ..	26.8	133.7	85.9	30.4	11.9	1.7	63.1	1,164	55.8	1,131
1881 ..	21.5	121.9	80.6	26.3	10.4	1.6	56.9	1,050	55.8	1,020
1891 ..	16.2	112.4	85.7	26.4	10.3	1.7	54.4	1,004	57.1	953
1901 ..	12.9	104.9	88.6	25.3	9.1	1.5	53.0	978	58.6	904
1911 ..	11.2	97.7	91.1	24.4	8.5	1.8	50.6	934	58.0	872
1921 ..	14.8	114.4	100.0	25.6	8.9	2.0	54.2	1,000	54.2	1,000
1931 ..	17.1	106.9	97.2	22.3	8.3	2.2	51.9	958	53.9	963
1932 ..	17.7	105.1	96.4	22.1	7.8	2.1	51.6	952	54.1	954
1933 ..	18.7	109.2	101.2	22.5	8.1	2.3	54.3	1,002	54.5	996
1934 ..	20.3	118.6	110.1	24.4	8.3	2.1	59.4	1,096	55.0	1,080
WIDOWS.										
1871 ..	55.4	170.5	125.5	55.7	20.8	2.6	21.1	1,172	19.6	1,077
1881 ..	56.6	155.3	114.5	50.2	18.6	2.6	18.2	1,011	18.5	984
1891 ..	49.3	150.4	114.3	50.3	17.8	2.4	16.3	906	16.8	970
1901 ..	54.9	140.7	115.9	48.9	15.6	2.1	14.4	800	15.6	923
1911 ..	30.0	151.2	114.1	48.9	15.6	2.1	12.5	694	13.6	919
1921 ..	36.1	191.4	120.3	50.6	17.6	2.5	18.0	1,000	18.0	1,000
1931 ..	57.1	140.8	93.0	33.2	13.6	2.2	8.7	483	11.7	744
1932 ..	14.3	153.2	84.8	31.9	12.3	2.1	8.0	444	11.4	702
1933 ..	45.5	137.7	87.0	32.2	12.2	2.1	7.9	439	11.2	705
1934 ..	83.3	158.4	89.8	33.1	13.0	2.1	8.0	444	11.0	727

the case of males are relatively more frequent than first marriages. As compared with 1933, all of the rates are higher, except that for widows at 55 years and over, which remains the same.

Comparison of the rates for spinsters and widows shows that the latter have the advantage in all age groups except at 25-35 and 55 and over. The age analysis serves to call attention to the misleading nature of the comparison suggested by the aggregate marriages per 1,000 population shown in column 8 of Table CVI; owing to the concentration of the single population at the younger ages where marriages are numerous, and the widowed population at the later ages where they are few, the aggregate rate for the single of each sex appears to be vastly in excess of that of the widowed, whereas, if allowance be made for the difference in their age constitutions, the relative positions are modified and, for all age-groups among males and nearly all age-groups among females, are in favour of the widowed.

Table CVII shows how the proportions of first marriages and re-marriages have varied from 1918 to 1934. In 1934 there was a higher proportion of first marriages, and consequently, a lower

Table CVII.—Proportions of First Marriages and Re-marriages in 1,000 Marriages, 1918-1934.

Year.	Men.		Women.		Bachelors who married.		Widowers who married.	
	Bachelors.	Widows.	Spinsters.	Widows.	Spinsters.	Widows.	Spinsters.	Widows.
1918	901	99	894	106	837	64	57	42
1919	897	103	875	125	816	81	59	44
1920	907	93	894	106	839	68	55	38
1921	911	89	909	91	855	56	54	35
1922	913	87	920	80	866	47	54	33
1923	915	85	929	71	875	40	54	31
1924	916	84	932	68	880	36	53	31
1925	916	84	937	63	884	32	53	31
1926	917	83	940	60	887	30	53	30
1927	918	82	942	58	890	28	52	30
1928	921	79	943	57	893	28	50	29
1929	920	80	946	54	894	26	51	29
1930	923	77	949	51	897	25	51	27
1931	924	76	950	50	900	24	50	26
1932	925	75	953	47	903	22	50	25
1933	926	74	954	46	904	22	50	24
1934	930	70	956	44	909	21	47	23

proportion of re-marriages, than in any of the previous years. An increasing trend in the proportion of first marriages is observable for both sexes, and especially for women, since 1919.

Tables L and K, which now appear in Part II of this Review, continue the series shown in previous issues of the Text Volume (Tables LXXXVI and LXXXVII in the volume for 1930). They classify by age the marriages of a number of years, the former giving the mean ages of the persons married in each of the possible combinations and the latter extending the analysis into a number of age-groups. Table K shows that, during the last 45 years or so, the modal age of marriage has tended to increase steadily. In each of the four sections the proportion marrying under 21 years of age has decreased. For bachelors, the most popular age has passed from 21–25 to 25–30, for widowers, from 35–40 to 50–55, and for widows from 35–40 to 40–45; while for spinsters, although the modal group has not changed—being throughout 21–25—the position of the mode has risen within the group. The distribution for 1934 as shown in Table K, and the average ages shown in Table L fluctuate in no significant way from the data of the previous few years.

Table G shows that more men married at age 25 and more women at age 22 than at any other age. Table J shows the ages of husbands and wives in combination. Among those under 25, for whom the data are given by single years of age, there is a tendency for brides to be about a year younger than bridegrooms.

Marriages of Minors.—Of the males married during the year, 13,382, or 3·91 per cent., were under the age of 21, and of the females 52,368, or 15·30 per cent., as compared with 4·08 per cent., and 15·79 per cent. last year respectively (*see* Tables M and CVIII). The male rate is lower than any recorded, and is only about

Table CVIII.—Minors Married per 1,000 Marriages at all Ages, 1876–1934.

Year.	Husbands.	Wives.	Year.	Husbands.	Wives.
1876–80 ..	77·8	217·0	1920 ..	46·8	142·9
1881–85 ..	73·0	215·0	1921 ..	48·2	149·2
1886–90 ..	63·2	200·2	1922 ..	44·4	144·4
1891–95 ..	56·2	182·6	1923 ..	42·5	142·9
1896–1900 ..	51·2	168·0	1924 ..	40·4	140·3
1901–05 ..	46·3	153·1	1925 ..	40·6	142·3
1906–10 ..	40·3	139·4	1926 ..	43·3	147·5
1911–15 ..	39·2	136·6	1927 ..	41·4	146·1
1916–20 ..	42·6	133·3	1928 ..	43·5	151·5
1921–25 ..	43·3	143·9	1929 ..	41·8	151·7
1926–30 ..	42·5	150·5	1930 ..	42·6	155·3
1917	41·7	134·2	1931 ..	43·5	158·5
1918	42·6	129·0	1932 ..	43·6	160·4
1919	43·7	129·4	1933 ..	40·8	157·9
			1934 ..	39·1	153·0

half of that shown for 1876–80. Females, who have always greatly outnumbered the males in this class—in the present year the ratio is nearly 4 to 1—naturally show the highest rates and the greatest changes in the rate; they formed 18·8 per 1,000 of the unmarried and widowed females aged 15–21 in 1911, were 26·6 in 1920, and are now 29·7, while the corresponding rates for males were 5·5, 8·8 and 7·3 per 1,000 respectively (*see* Table CIX).

Table CIX.—Annual Marriage-rate per 1,000 Unmarried and Widowed Persons in the age-group 15–21 in 1901, 1911, 1921, 1931 and 1927–34.

Year.	Males.		Females.	
	Rate.	Ratio to 1921. Per Cent.	Rate.	Ratio to 1921. Per Cent.
1901	6·7	87	21·6	92
1911	5·5	71	18·8	80
1921	7·7	100	23·4	100
1931	6·7	87	24·8	106
1927	6·0	78	21·6	92
1928	6·2	81	22·1	94
1929	6·2	81	23·0	98
1930	6·4	83	24·0	103
1931	6·7	87	24·8	106
1932	6·8	88	25·4	109
1933	6·8	88	27·1	116
1934	7·3	95	29·7	127

Comparative figures are shown in Table CIX for certain years back to 1901, before which the age-group 15–21 was not identified in the population returns; an indication of the trend of youthful marriage-rates in earlier periods may be gained from Table CVIII.

The proportions of males and females marrying under age are summarised for regions in Table CX, and the numbers are stated in Table M. Much of the variation there shown is but a reflex of the incidence of the general marriage-rate (Table CV), and regard must necessarily be had to the latter in considering how far the former provides evidence of local custom regarding early marriage. In 1934 the three areas in which the proportion of male minors marrying was highest were, in order, Midland II, North III, and North IV. For females, the corresponding areas were Wales I, North I, and East. As between 1933 and 1934, increases are recorded for both sexes and in all regions, except for males in North II and Wales I.

Divorces and Remarriages of Divorced Persons.—The annual numbers of marriages dissolved or annulled are shown in Table O and again in Table CXI in terms of the persons involved, for each of the past fourteen years and for each quinquennium back to 1876–80.

Table CX.—Marriage-rate of Minors per 1,000 Unmarried Population aged 15–21 in Geographical Sections of the Country, 1933 and 1934.

Area.	1933.				1934.			
	Rate per 1,000 Unmarried Population 15–21.		Ratio of local rate to England and Wales rate taken as 1,000.		Rate per 1,000 Unmarried Population 15–21.		Ratio of local rate to England and Wales rate taken as 1,000.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
England and Wales.	6·8	27·1	1,000	1,000	7·3	29·7	1,000	1,000
South-East	5·7	23·9	838	882	6·3	26·4	863	889
North ..	7·8	28·8	1,147	1,063	8·2	31·1	1,123	1,047
North I ..	7·1	36·7	1,044	1,354	7·6	39·5	1,041	1,330
North II ..	7·8	31·7	1,147	1,170	7·5	32·3	1,027	1,088
North III ..	8·4	29·8	1,235	1,100	8·5	32·3	1,164	1,088
North IV ..	7·8	25·1	1,147	926	8·5	27·2	1,164	916
Midland ..	7·4	27·0	1,088	996	8·1	29·4	1,110	990
Midland I ..	7·1	25·8	1,044	952	7·7	28·5	1,055	960
Midland II	7·9	29·3	1,162	1,081	8·8	31·1	1,205	1,047
East	6·8	31·4	1,000	1,159	7·5	34·8	1,027	1,172
South-West ..	5·6	25·9	824	956	6·3	30·2	863	1,017
Wales ..	7·1	34·4	1,044	1,269	7·1	38·1	973	1,283
Wales I ..	8·0	38·6	1,176	1,424	7·7	42·9	1,055	1,444
Wales II ..	4·3	22·5	632	830	5·4	24·8	740	835

During the year 1934, 4,199 divorces and 88 annulments were obtained, the number of persons involved being twice these figures, or a total of 4,287 of each sex.

The number of divorces is higher than that in any previous year, and is substantially higher than the number in 1933, which was itself a record.

From Table CXI it will be seen that the number of persons who on remarriage described themselves as divorced shows an increase and is greater than the corresponding figure recorded for any earlier year. In view of the increasing numbers of divorces, an increasing trend in such marriages is to be expected. The numbers may understate the facts owing to misdescription of status in the registers.

In Table P are given certain particulars concerning the marriages in respect of which suits for dissolution or annulment were commenced during the year. 3,855 petitions were filed at the Principal Registry in London and 1,043 at 38 District Registries. In respect of

the petitions filed at the Principal Registry in London it will be seen that the most frequent duration of marriage at the date of the commencement of the proceedings is from 5-10 years with an average of 235 for each of those years of duration, but the maximum is not of particular significance, for this period only

Table CXI.—Annual Number of Persons Divorced, and of Divorced Persons who Remarried, 1876-1934.

Period.	Number of Persons Divorced.	Annual Number of Divorced Persons who remarried.							
		Total.	Men.	Women.	Divorced men marrying spinsters.	Divorced men marrying widows.	Divorced men and women inter-marrying.	Divorced women marrying bachelors.	Divorced women marrying widowers.
1876-80 ..	554	104	56	48	42	12	4	31	15
1881-85 ..	671	128	68	60	53	12	6	42	15
1886-90 ..	707	169	80	89	65	11	8	65	20
1891-95 ..	744	214	110	104	89	15	12	75	23
1896-1900 ..	980	345	172	173	138	24	20	126	37
1901-05 ..	1,126	509	262	247	205	38	38	181	47
1906-10 ..	1,247	693	356	337	276	53	54	253	57
1911-15 ..	1,312	820	411	409	330	50	62	309	69
1916-20 ..	3,115	1,264	683	581	525	127	62	439	111
1921-25 ..	5,467	3,050	1,708	1,342	1,316	295	194	976	269
1926-30 ..	6,716	3,917	2,128	1,789	1,662	270	392	1,225	368
1921.. ..	7,044	2,878	1,592	1,286	1,182	330	160	939	267
1922.. ..	5,176	3,374	1,913	1,461	1,457	360	192	1,062	303
1923.. ..	5,334	3,008	1,679	1,329	1,307	279	186	1,002	234
1924.. ..	4,572	2,903	1,627	1,276	1,267	275	170	931	260
1925.. ..	5,210	3,088	1,729	1,359	1,367	229	266	944	282
1926.. ..	5,244	3,124	1,710	1,414	1,325	231	308	995	265
1927.. ..	6,380	3,576	1,924	1,652	1,509	244	342	1,133	348
1928.. ..	8,036	4,125	2,268	1,857	1,764	302	404	1,299	356
1929.. ..	6,792	4,427	2,408	2,019	1,886	307	430	1,357	447
1930.. ..	7,126	4,331	2,330	2,001	1,826	267	474	1,342	422
1931.. ..	7,528	4,668	2,517	2,151	1,963	299	510	1,456	440
1932.. ..	7,788	4,824	2,537	2,287	2,011	259	534	1,539	481
1933.. ..	8,084	5,068	2,747	2,321	2,135	318	294	1,571	456
1934.. ..	8,574	5,545	3,026	2,519	2,378	321	327	1,662	530

accounts for 30 per cent. of the cases, there being 17 per cent. of shorter duration, while in 53 per cent. the marriages have subsisted for 10 years or more. Forty-two per cent. of the marriages in question were childless, and in a further 30 per cent. there was one child only. These figures are substantially similar to those recorded in 1931 to 1933.

Buildings in which Marriages may be Solemnized.—At the end of the year 1934 the numbers of churches or chapels of the Established Church and of the Church in Wales and of registered buildings in which marriages could be legally solemnized, were as follows :—

vs. —

		Number added in 1934.	Increase per cent. since 1921.
Established Church and Church in Wales	16,515	43	2.2
All other religious denominations	20,937	231	15.6
Total	37,452	274	9.3

The number of these buildings belonging to the various denominations is shown for the several geographical regions in Table N, which thus provides some indication of the relative strength of the various religious bodies in different parts of the country.

By the Acts 15 and 16 Vict. c. 36, and 18 and 19 Vict. c. 81, it was enacted that all places of religious worship not being churches or chapels of the Established Church, should, if the congregations desired, be certified as such to the Registrar-General, certification for public religious worship being a necessary preliminary to the registration of a building for the solemnization of marriages.

The number of places of meeting for religious worship on the official register on the 31st December, 1934, and the number of buildings registered for the solemnization of marriages are shown in Table CXII.

Table CXII.

Denomination.	Buildings certified to the Registrar- General as meeting- places for Religious Worship.	Buildings registered for the Solemnization of Marriages.*	Increase or decrease (—) per cent. since 1921 in the number of buildings certified for Religious Worship.
Roman Catholics	1,972	1,820	26·4
Methodist Church†	14,281	8,660	2·3
Congregationalists	3,507	3,235	4·3
Baptists	3,404	3,073	6·8
Calvinistic Methodists	1,386	1,109	6·7
Presbyterians	468	464	4·5
Unitarians	184	196	—
New Church	60	63	9·1
Catholic Apostolic Church	62	50	—11·4
Countess of Huntingdon's Connexion	45	40	— 4·3
Salvation Army	1,465	351	29·0
Society of Friends	421	†	— 2·3
Jews	310	†	19·7
Other Denominations	5,305	1,876	59·1
All Denominations	32,870	20,937	12·0

* Of these buildings nearly 1,000 were certified before 1852, as Places of Meeting for Religious Worship, to some other authority than the Registrar-General and therefore are not included in the preceding column.

† It is not necessary for buildings to be registered for the solemnization of Quaker or Jewish marriages. Under section 31 of the Births, Deaths, and Marriages Registration Act (1836), Registering Officers of the Society of Friends and Secretaries of Jewish Synagogues who have been certified to the Registrar-General record the marriages in each case.

‡ Includes Wesleyan Methodist, Primitive Methodist and United Methodist Churches.

The Marriage Act, 1898, provided that under specified conditions marriages might be solemnized in registered buildings in the presence of duly authorised persons without the attendance of a Registrar of Marriages. The governing bodies of some of the registered buildings have availed themselves of this provision, and at the end of the year 1934, the number of such buildings which had

been brought under the operation of the Act, and so remained, was 6,776 out of the total of 20,937. The numbers of these buildings, and the denominations to which they belonged, were as follows :—

4,442	Methodist Church.
978	Congregationalists.
700	Baptists.
164	Calvinistic Methodists.
492	Other Denominations and Unsectarian.
<hr/>	
6,776	All Denominations.

Manner of Solemnization.—The classification of marriages, according to the method of solemnization which was shown in the Annual Reports of the Registrar-General for each year up to 1914, has since been carried out in respect of every fifth year, that is, for 1919, 1924, 1929, and 1934. The data for 1934 appear in Table F1 on pp. 64, 65 of Part II of this Review, and are expressed in the form of proportions per 1,000 marriages in Table CXIV of this volume. Table CXIII supplies comparative material for each fifth year back to 1844.

Civil marriages in England and Wales (*see* Table CXIII), which in 1844 were only 2·6 per cent. of the total, have shown almost continuous increases since then, and have now reached 28·4 per cent.; the marriages with religious ceremonial showing a corresponding decrease. In London a much more rapid increase in the proportion of civil marriages is recorded—from 1·3 per cent. in 1844 to 38·8 per cent; in 1934. The figures for 1934 continue the trends observable for many years, but with a somewhat higher rate of increase.

Marriages celebrated in 1934 according to the rites of the Church of England and of the Church in Wales and Monmouthshire, which numbered 176,703 and 6,420 respectively, together represent 53·5 per cent. of the total marriages, and continue the decline which has been taking place since 1844. Marriages in the churches of other protestant denominations formed 4·8 per cent. of the total in 1844: the rate rose to a maximum of 13·2 in 1909, and has now fallen to 10·9. Roman Catholic marriages, on the other hand, which were 1·7 per cent. in 1844, and remained steady at about 4·2 from 1869 to 1914, have since increased regularly to 6·5. The proportion of marriages according to the rites of the Society of Friends is the same in 1934 as it was in 1844—0·4 per 1,000 total—and in each of the intervening years shown in Table CXIII (except one) has been 0·3 or 0·4 per 1,000. Jewish marriages, which were 1·3 per 1,000 in 1844, rose to a maximum of 7·0 in 1904, and after minor movements, are now 6·5.

Table F1 (Part II) and Table CXIV show respectively the numbers and proportions of marriages according to the registration county and the form of religious ceremony, and thus supplement the

information provided in Table N regarding the distribution of the several religious bodies. Of the 2,233 Jewish marriages contracted in 1934, 1,603 or 71·8 per cent. were registered in London, 239 or 10·7 per cent. in Lancashire, 121 or 5·4 per cent. in Yorks (West Riding), and 108 or 4·8 per cent. in Middlesex, these four registration counties

**Table CXIII.—England and Wales and London—Marriages:
Manner of Solemnization, 1844—1934.**

Year.	Of 1,000 Marriages.																	
	England and Wales.											London.						
	With Religious Ceremonial.											Not according to the rites of the Established Church.						
	According to the rites of the Established Church or Church in Wales.						Not according to the rites of the Established Church.											
	Special Licence.	Licence.	Banns.	Superintendent Registrar's Certificate.	Not Stated.	Total in Established Church or Church in Wales.	In Registered Places.		Society of Friends.	Jews.	Civil Marriages.							
							Roman Catholics.	Other Christian Denominations.										
							Before Registrar.	Before Authorised Person.	Before Registrar.	Before Authorised Person.								
1844	0·1	113	643	12	139	907	17	48	0·4	1·3	26	943	19	17·1	7·4	13		
1849	0·1	118	639	18	93	868	30	61	0·4	1·6	39	930	24	20·2	8·1	18		
1854	0·1	132	658	24	26	840	49	61	0·3	1·8	48	898	49	22·0	8·4	23		
1859	0·1	121	643	25	23	812	46	75	0·4	1·9	65	897	43	26·7	9·2	24		
1864	0·1	110	629	24	19	782	48	87	0·3	1·9	81	884	49	31·6	8·7	27		
1869	0·1	98	627	23	15	763	41	99	0·3	1·9	95	881	35	35·1	7·9	41		
1874	0·1	87	637	19	4	747	40	105	0·2	2·3	105	870	33	39·1	9·2	49		
1879	0·2	78	624	18	3	723	41	113	0·3	2·5	120	845	36	39·2	9·9	70		
1884	0·3	60	628	17	2	707	43	116	0·3	2·9	131	816	38	39·1	12·1	95		
1889	0·1	48	632	16	2	698	42	116	0·3	4·1	140	788	38	44·3	16·7	113		
1894	0·1	41	630	13	2	686	42	119	0·3	5·0	143	759	37	42·4	21·5	140		
1899	0·1	34	634	9	1	678	41	113	11	0·3	6·4	150	730	35	46·2	28·5	160	
1904	0·2	30	604	7·0	0·7	642	41	101	30	0·3	7·0	179	676	39	46·3	35·5	203	
1909	0·1	28	579	6·0	0·9	614	42	92	40	0·4	6·8	205	624	40	48·3	34·0	254	
1914	0·2	42	536	4·4	0·8	583	46·6	0·4	72	50	0·3	6·7	241	559	43	41·4	34·3	322
1919	0·2	124	469	2·0	1·8	597	50·6	1·4	63	52	0·4	5·0	231	565	55	33·3	26·5	317
1924	0·1	54	520	1·8	1·8	578	52·5	2·5	62	60	0·3	6·7	238	544	55	41·5	33·1	324
1929	0·1	40	520	1·1	0·5	562	57·0	3·0	53	61	0·3	6·7	257	517	60	39·5	35·6	348
1934	0·1	28	505	0·9	0·5	535	61·1	3·9	47	62	0·4	6·5	284	469	69	37·6	37·1	388

thus accounting for 93 per cent. of the total. Most of the Jewish marriages are concentrated in a small number of areas : of the 1,603 in the County of London 772 were contracted in Stepney, 243 in Hackney, 136 in the City of London, 93 in St. Marylebone, 82 in Poplar, and 54 in Bethnal Green. Of the 121 in the West Riding, 104 took place in Leeds, and of the 239 in Lancashire, 186 took place in Manchester and Salford.

Marriages according to the rites of the Established Church show widely differing proportions. In England they vary from 756 per 1,000 in Rutlandshire, 683 in Westmorland, and 665 in Herefordshire and Shropshire, to 483 in Durham, 469 in London and 468 in Cornwall; while in Wales, which has an all over proportion of 313 per

1,000, they vary from 602 in Radnorshire to 162 in Merionethshire. Of the other churches, the Roman Catholics are relatively strong in the regions North I and North IV and weak in the East and South-West; the Methodists are strong in the South-West and in North III; the Congregationalists and Baptists exhibit the greatest strength in Wales, and the least in North II; and the Calvinistic Methodists are confined almost entirely to Wales, the highest rates being recorded in the north-western counties.

Civil marriages are relatively more frequent in Wales than in England. As in 1929, high proportions are reached in Glamorgan and Carmarthen (44 and 41 per cent.) respectively; and in six other Welsh counties the proportion exceeds 30 per cent. The figure for London (39 per cent.) is somewhat lower than that found in some of the Welsh counties, but is higher than in any of the other English counties, of which only seven—Surrey, Sussex, Hampshire, Berkshire, Middlesex, Warwickshire and Yorks, East Riding—have a proportion of over 30 per cent.

Some evidence as to the extent of illiteracy is to be found in Table FI in the numbers of persons who signed the marriage register by making a mark. The following table shows how the numbers have decreased since 1914.

Signature by Mark.

Year.				Man only.	Woman only.	Both Parties.
1914 ...	...	...	...	2,322	2,819	537
1919 ...	...	...	...	2,463	2,433	520
1924 ...	...	...	...	995	1,041	215
1929 ...	...	...	...	774	776	141
1934 ...	...	...	...	463	427	84

LIVE BIRTHS.

The live births registered during 1934 numbered 597,642, corresponding to a birth-rate of 14·8 per 1,000 of the population living. (Tables B and C.)

The number of births is 17,229 more than those of 1933, an increase of 2·97 per cent.

The current rate of 14·8 per 1,000 is the lowest so far attained in the records of this country, excepting 1933. The recent fall in the rate had been showing signs of diminution in immediately preceding years, and it might have been inferred from the rates for 1929 and 1930—16·3 in both—that the particular phase of movement associated with post-war adjustments was drawing to a close. The 1931 returns, however, showed a further decline to 15·8, and this was followed by 15·3 in 1932 and 14·4 in 1933. As explained on pages 187–189, the present rate of recruitment is well below that which is necessary if a diminution of the total population is to be avoided in the future.

Table CXIV.—Marriages—Mode of Solemnization, 1934.

Area (Registration Counties).	Of 1,000 Marriages.								
	With Religious Ceremonial.								
	Total.	According to the rites of the Established Church or Church in Wales.						Total.	
		Special Licence.	Licence.	Banns.	Superintendent Registrar's Certificate.	Not stated.	Total in Established Church or Church in Wales.	Before Registrar.	Before Authorised Person.
ENGLAND AND WALES. <i>Regional Summary.</i>	716	0·1	28	505	0·9	0·5	535	108	66
South East	662	0·2	19	517	0·4	0·5	536	81	29
North	767	0·0	32	485	2·0	0·3	519	148	96
North I	711	—	28	455	3·2	0·1	486	156	68
North II	741	—	48	511	1·2	0·1	560	106	73
North III	759	0·0	23	534	1·0	0·2	558	82	114
North IV	797	0·0	36	462	2·2	0·4	501	191	100
Midland	744	0·0	27	573	0·2	0·8	601	53	89
Midland I	745	0·1	25	581	0·2	0·9	607	53	84
Midland II	742	—	30	557	0·2	0·7	589	53	100
East	746	0·1	31	604	0·7	1·0	637	63	45
South West	754	0·1	48	532	0·1	1·3	582	103	70
Wales	623	0·0	42	270	1·3	0·1	313	243	66
Wales I	601	—	37	269	1·1	—	308	222	70
Wales II	691	0·2	55	272	1·9	0·4	330	306	55
London	612	0·4	13	454	0·8	0·5	469	88	18
Surrey	686	—	21	552	0·2	0·3	573	85	26
Kent	723	—	20	610	0·2	1·0	632	59	33
Sussex	685	—	24	562	0·3	0·7	587	76	20
Hampshire	657	—	31	501	0·4	0·2	532	84	40
Berkshire	694	0·4	29	568	0·7	0·4	598	64	31
Middlesex	639	0·1	15	489	0·1	0·2	505	82	44
Hertfordshire	724	0·3	21	584	—	1·0	607	85	30
Buckinghamshire	722	0·5	33	577	0·5	0·9	611	75	33
Oxfordshire	736	0·6	44	590	—	0·6	635	68	31
Northamptonshire	751	—	25	551	0·3	1·6	578	46	127
Huntingdonshire	819	—	36	655	—	2·2	694	101	25
Bedfordshire	729	—	28	553	—	—	582	79	68
Cambridgeshire	741	0·5	30	600	—	2·7	633	80	29
Essex	729	—	17	590	0·1	0·4	608	81	37
Suffolk	746	—	25	613	0·3	1·2	640	73	34
Norfolk	720	—	36	596	1·2	0·5	634	48	37
Wiltshire	764	—	29	595	—	2·6	627	90	46
Dorsetshire	748	—	35	586	—	2·7	624	73	51
Devonshire	703	0·2	47	499	—	0·7	548	91	63
Cornwall	767	—	75	391	0·4	0·8	468	148	151
Somersetshire	821	—	50	603	0·3	1·3	654	113	53
Gloucestershire	725	—	34	570	0·2	0·7	606	72	47
Herefordshire	750	—	56	605	—	3·8	665	65	19
Shropshire	798	—	70	590	—	4·5	665	87	46
Staffordshire	787	0·1	22	602	0·1	0·6	624	53	109
Worcestershire	774	—	25	626	0·3	0·3	652	51	72
Warwickshire	697	—	17	551	0·4	0·6	569	39	86
Leicestershire	731	—	28	534	0·4	0·2	562	63	106
Rutlandshire	846	—	16	740	—	—	756	65	24
Lincolnshire	758	—	32	599	0·8	0·6	632	58	68
Nottinghamshire	727	—	28	583	—	0·7	611	41	75
Derbyshire	765	—	40	547	0·2	0·6	587	65	113
Cheshire	805	0·1	42	524	0·8	0·5	567	130	107
Lancashire	795	0·0	35	451	2·5	0·4	489	202	98
Yorkshire, West Riding (with York)	759	0·0	23	534	1·0	0·2	558	82	114
Yorkshire, East Riding	682	—	30	520	—	—	550	71	58
Yorkshire, North Riding	768	—	50	494	0·5	0·3	544	143	78
Durham	713	—	28	451	4·2	0·2	483	151	78
Northumberland	708	—	28	462	1·3	—	492	166	48
Cumberland	786	—	73	502	5·2	—	581	104	99
Westmorland	833	—	75	608	—	—	683	102	46
Monmouthshire	708	—	31	347	0·8	—	379	269	58
Glamorganshire	558	—	34	253	1·4	—	288	201	67
Cardiganshire	587	—	68	173	0·7	—	241	205	140
Pembrokeshire	652	—	78	290	1·6	—	369	222	61
Cardiganshire	663	—	99	127	6·4	2·1	234	352	77
Brecknockshire	746	—	70	290	—	—	360	372	14
Radnorshire	865	—	143	459	—	—	602	241	23
Montgomeryshire	781	—	54	311	2·7	2·7	370	332	78
Flintshire	808	—	55	459	1·5	—	516	241	51
Denbighshire	685	0·8	32	322	—	—	355	269	61
Merionethshire	689	—	26	131	5·2	—	162	465	63
Caernarvonshire	640	—	49	205	0·9	—	255	357	28
Anglesey	557	—	57	125	3·8	—	186	311	61

Table CXIV.—Marriages—Mode of Solemnization, 1934.

Of 1,000 Marriages.								Civil Marriages.	Area (Registration Counties).
With Religious Ceremonial.									
Not according to the rites of the Established Church or Church in Wales.									
In Registered Places.									
Roman Catholics.	Methodist Church.	Congregationalists.	Baptists.	Calvanistic Methodists.	Other Denominations.	Society of Friends.	Jews.		
65	53	21	18	4	14	0.4	6.5	284	ENGLAND AND WALES. <i>Regional Summary.</i>
52	21	15	13	1	10	0.4	14.9	338	South East.
109	82	21	10	0	21	0.4	3.7	233	North.
109	80	6	6	—	22	0.2	1.3	289	North I.
75	73	10	5	—	14	0.1	1.7	259	North II.
59	90	22	13	—	12	0.4	4.1	241	North III.
144	80	27	11	1	27	0.6	4.7	203	North IV.
41	56	18	17	0	10	0.4	0.5	256	Midland.
48	49	16	14	0	10	0.4	0.7	255	Midland I.
27	70	23	23	—	10	0.3	0.0	258	Midland II.
16	52	17	18	—	6	0.4	0.2	254	East.
22	91	23	27	—	11	0.4	—	246	South West.
47	39	70	81	58	13	0.0	1.0	377	Wales.
55	34	65	90	33	15	0.1	1.3	399	Wales I.
26	53	85	54	133	10	—	0.2	309	Wales II.
69	10	8	8	1	10	0.1	37.1	388	London.
55	21	14	10	—	10	1.0	0.7	314	Surrey.
31	20	16	16	—	9	0.1	—	277	Kent.
39	17	18	11	0	11	0.3	1.7	315	Sussex.
41	37	23	12	—	12	—	0.7	343	Hampshire.
28	35	12	14	—	6	0.4	—	306	Berkshire.
56	27	15	16	0	12	1.1	7.1	361	Middlesex.
35	23	24	25	—	9	1.3	0.3	276	Hertfordshire.
26	40	12	22	—	8	2.3	—	278	Buckinghamshire.
38	26	14	12	—	9	1.8	—	264	Oxfordshire.
16	54	47	45	—	12	0.3	—	249	Northamptonshire.
4	51	25	43	—	2	—	—	181	Huntingdonshire.
24	59	21	38	—	4	—	—	271	Bedfordshire.
16	39	13	35	—	5	—	—	259	Cambridgeshire.
39	25	25	17	—	11	0.4	2.5	271	Essex.
11	25	31	30	—	11	—	—	254	Suffolk.
15	40	11	13	—	6	1.2	0.2	280	Norfolk.
25	58	16	27	—	11	—	—	236	Wiltshire.
22	42	35	16	—	10	—	—	252	Dorsetshire.
31	68	20	21	—	14	0.5	—	297	Devonshire.
9	268	9	8	—	5	0.4	—	233	Cornwall.
14	59	34	51	—	9	0.8	—	179	Somersetshire.
29	32	18	23	0	17	0.3	—	275	Gloucestershire.
29	24	1	21	—	9	—	—	250	Herefordshire.
20	72	18	6	4	12	—	—	202	Shropshire.
58	77	13	7	—	7	0.1	0.2	213	Staffordshire.
30	48	17	14	—	13	—	—	226	Worcestershire.
55	26	19	16	0	9	0.9	1.8	303	Warwickshire.
34	71	18	34	—	12	0.2	—	269	Leicestershire.
33	24	24	8	—	—	—	—	154	Rutlandshire.
19	85	13	7	—	3	0.2	0.4	242	Lincolnshire.
22	55	13	14	—	10	0.6	0.1	273	Nottinghamshire.
32	99	25	13	—	9	—	—	235	Derbyshire.
87	79	33	9	1	29	0.2	0.7	195	Cheshire.

The birth-rate in this country attained its highest values since the commencement of civil registration during the period 1865-1880, when it exceeded 35 per 1,000 population, and from that time it diminished by gradual and practically continuous stages to 23·8 in 1914; the present rate of 14·8 per 1,000 is considerably less than half the maximum figure of 36·3 recorded in 1876.

The recent history of the birth-rate in this country may be compared with those of other countries of which particulars are at hand by reference to Table Q. The record extends over the period from 1911 to 1934 (for earlier years, *see* the Registrar-General's Annual Report for 1910) and covers therefore not only the years of the war period itself when the movements were quite abnormal, but a number of earlier and later years. Of the countries for which 1934 returns are available, England and Wales, Scotland, Northern Ireland, Denmark, Germany, Roumania and the United States of America record increases in their birth-rates as compared with 1933, while four remain the same and the remaining 12 show decreases. Two only of these countries, Austria (13·5 per 1,000 population) and Sweden (13·7) have lower rates than that of England and Wales (14·8).

In all the countries listed except France, Spain, Portugal, and Japan the recent rates show a large fall in comparison with pre-war experience, a fall which in respect of England and Wales is the more serious since the position of this country in relation to that of others was already a low one before the war. The case of France is somewhat exceptional in that the current rate is not much lower than it was before the war, so that instead of being outstandingly the lowest in the series as formerly, it now ranks above England and Wales, Austria, Belgium, Norway and Sweden. The rise of the birth-rate in Germany from 14·7 in 1933 to 18·0 in 1934, after a series of falls, is a feature of some interest. Apart from this the increases recorded are all small, and while they may suggest that minimum rates have now been passed, may, with equal likelihood, indicate merely temporary breaks in the downward progress.

The crude birth-rate, or ratio of births to population of all ages, is a convenient form of statement when the object in view is to record the aggregate effect of all the various factors governing reproduction. It sums up the effects of all the influences governing the rate at which the community is reproducing itself and is, therefore, in conjunction with the corresponding form of mortality statement, the crude death-rate, the appropriate means of measuring natural increase. The number of births in the country, however, depends mainly upon the number of married women at the reproductive ages, and as they form less than one-eighth of the total population the variation of their numbers and ages over a period of time may be different from that of the whole population, in which case the crude birth-rates form but an imperfect measure

of the changes in fertility, *i.e.* of the rate of reproduction in proportion to the opportunity of reproduction. In the absence of any knowledge of the constitution of the general population the crude rate is often used as an index of fertility, but always on the implied assumption of a fixed proportion of potential mothers, an assumption which may reasonably be made only in respect of short periods of adjacent years.

In order to exclude the effect of changing age-constitution of the population, and so obtain a better statement of variations of fertility, a method of standardization was introduced in the Statistical Review (Text) for 1922, and has been in use since then. A description of the method, together with a series of fertility rates calculated for England and Wales in 1921 and 1931 were given in the Registrar-General's Statistical Review for 1932 (Text, pp. 135, 136).

Summarized comparisons based on these fertility rates are given in the last column of Table CXV for groups of three years about each census from 1871 to 1931, and for the individual years 1931 to 1934. The results are contrasted in that table with the more familiar comparisons given by the crude birth-rates whether calculated per 1,000 total population or per 1,000 married women between ages 15 and 45. Thus, in 1870–72, 2,148 legitimate births were recorded for every 1,000 that would have occurred under the standard fertility rates, the 1931 experience being in the aggregate less than half of that of 60 years before. From 1871 the rates diminished steadily and progressively to 1,592 in 1910–12. Since 1920–22 the even more rapid drop, commented upon in dealing with the crude rates, is shown by the further reductions in the index, from 1,460 to 1,000 in 1931. It will be observed that over the earlier years shown in the table the decrease in fertility was overstated by the crude rates, and that since 1920–22 the tendency has been in the other direction.

Illegitimate Births.—The live births registered during 1934 include 25,785 of illegitimate children, an increase of 377 on the number in 1933, coincident with the increase of 17,229 in total births. Illegitimate births have thus increased by 1·5 per cent., and legitimate births by 3·0 per cent. As a result of these changes, the proportion of illegitimate to total births has fallen from 4·38 per cent. last year to 4·31 per cent., figures which compare with the minimum of 3·95 per cent. recorded for the period 1901–1905 and the maximum of 6·26 per cent. in 1918.

In addition to the crude rate comparison, an attempt has been made in Table CXV to allow for the age distribution of the potential mothers in respect of illegitimate as well as legitimate births in the manner referred to above. The rates for illegitimate fertility are of much less authority than the rates for legitimate fertility.

Seasonal Distribution of Births.—The number of births registered in each quarter of the year and their frequency per 1,000 population are shown in Table D. Since 1923 the highest rate has occurred in

every case in the second quarter. This contrasts with the experience of 1841 to 1890 when the highest rates usually occurred in the first quarter. The lowest rate is recorded consistently in the fourth quarter.

Table CXV.—Birth-rates and Fertility, 1870–1934.

			Births per 1,000 Total Population.	Ratio to 1931.	Births per 1,000 Married Women, 15–45.	Ratio to 1931.	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.
Legitimate Live Births.							
1870–72	..	..	33·3	2,205	292·5	2,380	2,148
1880–82	..	..	32·3	2,139	286·0	2,327	2,117
1890–92	..	..	29·4	1,947	263·8	2,146	1,983
1900–02	..	..	27·5	1,821	235·5	1,916	1,797
1910–12	..	..	23·4	1,550	197·4	1,606	1,592
1920–22	..	..	21·7	1,437	178·9	1,456	1,460
1930–32	..	..	15·1	1,000	122·4	996	999
1931	..	..	15·1	1,000	122·7	1,000	1,000
1932	..	..	14·6	967	118·0	962	964
1933	..	..	13·8	914	110·4	900	905
1934	..	..	14·1	934	112·7	919	926
			Births per 1,000 Total Population.	Ratio to 1931.	Births per 1,000 Unmarried Women, 15–45.	Ratio to 1931.	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.
Illegitimate Live Births.							
1870–72	..	..	1·96	2,800	17·0	2,982	2,886
1880–82	..	..	1·65	2,357	14·1	2,474	2,375
1890–92	..	..	1·31	1,871	10·5	1,842	1,755
1900–02	..	..	1·12	1,600	8·5	1,491	1,419
1910–12	..	..	1·03	1,471	7·9	1,386	1,363
1920–22	..	..	1·04	1,486	8·1	1,421	1,430
1930–32	..	..	0·71	1,014	5·8	1,018	1,002
1931	..	..	0·70	1,000	5·7	1,000	1,000
1932	..	..	0·67	957	5·6	982	974
1933	..	..	0·63	900	5·4	947	936
1934	..	..	0·64	914	5·6	982	970
			Births per 1,000 Total Population.	Ratio to 1931.	Births per 1,000 total Women, 15–45.	Ratio to 1931.	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.
All Live Births.							
1870–72	..	..	35·3	2,234	153·7	2,387	2,179
1880–82	..	..	34·0	2,152	147·7	2,293	2,128
1890–92	..	..	30·7	1,943	129·7	2,014	1,972
1900–02	..	..	28·6	1,810	114·8	1,783	1,779
1910–12	..	..	24·5	1,551	98·3	1,526	1,581
1920–22	..	..	22·8	1,443	91·1	1,415	1,459
1930–32	..	..	15·8	1,000	64·3	998	1,000
1931	..	..	15·8	1,000	64·4	1,000	1,000
1932	..	..	15·3	968	62·6	972	964
1933	..	..	14·4	911	59·4	922	906
1934	..	..	14·8	937	61·5	955	928

The seasonal distribution of births is thus consistent with the seasonal distribution of marriages, the frequency of which, as has already been noted (p. 162) is a maximum in the third and a minimum in the first quarter.

The degree of association between the frequency of marriages and that of births some nine to twelve months afterwards tends to increase with the progressive reduction in the size of families, and the consequent increase in the proportion of first-born children in the total.

Birth-rates of Different Parts of the Country.—The birth-rates, total and illegitimate, of individual administrative areas tabulated in Table E are summarized in Table CXVI for the geographical regions, and their sub-divisions.

The method for comparing the fertility of England and Wales in different years by the use of standard fertility rates applies equally well to the comparison of fertility in different sections of the population of which the sex, age and marital condition constitution is known, and the crude rate comparisons are supplemented in this table by the addition of a series of figures in which variations in birth-rates due solely to differences in the age and marital condition proportions of the several populations, as far as possible, have been eliminated.

Table CXVI shows for each of the specified divisions of the country the crude birth-rates of 1933 and 1934, the ratio of the crude rate to that of the country as a whole, and the corresponding ratio obtained by the use of the standard fertility rates of 1931.

The birth changes which have occurred between 1933 and 1934 in the geographical regions and types of area shown in the table are in general consonance with the movement in the country as a whole. Comparison of the 1934 crude rates for the several areas shows that the highest for all births are found in North I and II, and the lowest in the South-West and South-East. Crude rates for illegitimate births are highest in North II and Wales II, and lowest in Midland I.

The ratios shown in column (2) are based upon the crude rates and reflect therefore not only differences of fertility but also the varying incidence of sex, age and marital condition in the populations from which they arise. When the latter factors are eliminated as in column (4) of Table CXVI, the process may result in altering materially the relative position of an area; for instance, the ratio for Wales II rises from 966 (crude) to 1,182 (standardized) while Midland II falls from 1,000 to 947. If the areas be examined from the point of view of urbanization the change from the crude to the standardized comparison is also notable. By the crude rates the position of rural areas is distinctly understated, since from the point of view of fertility alone they are shown to be the most productive of all areas.

The extent of illegitimacy in different classes of area and parts of the country may be gathered from the right half of Table CXVI. Except for a wider range of variation generally the distribution is not significantly different from that of all births.

Table CXVI.—Birth-rates by Geographical Regions, 1933 and 1934.
(For the constitution of the several regions, see page 13).

Region.	All Births.				Illegitimate Births.			
	Birth-rate per 1,000 Total Population.	Ratio to Rate for England and Wales, taken as 1,000 (Crude Rates).	Ratio of Actual Births per 1,000 of those which would have occurred had the Standard age rates been operating.	Ratio compared with that for England and Wales, taken as 1,000.	Birth-rate per 1,000 Total Population.	Ratio to Rate for England and Wales, taken as 1,000 (Crude Rates).	Ratio of Actual Births per 1,000 of those which would have occurred had the Standard age rates been operating.	Ratio compared with that for England and Wales, taken as 1,000.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1933.								
England and Wales ..	14.4	1,000	906	1,000	0.63	1,000	936	1,000
Regional Summary—								
South-East	13.5	938	851	939	0.62	984	869	928
Greater London ..	13.5	938	822	907	0.60	952	789	843
Remainder of South-East.	13.7	951	900	993	0.64	1,016	1,020	1,090
North	15.0	1,042	941	1,039	0.65	1,032	963	1,029
North I	17.2	1,194	1,052	1,161	0.69	1,095	1,158	1,237
North II	16.0	1,111	1,049	1,158	0.89	1,413	1,420	1,517
North III	14.4	1,000	868	958	0.61	968	930	994
North IV	14.4	1,000	918	1,013	0.59	937	835	892
Midland	14.7	1,021	905	999	0.57	905	855	913
Midland I	14.8	1,028	928	1,024	0.56	889	833	890
Midland II	14.5	1,007	864	954	0.58	921	900	962
East	14.4	1,000	963	1,063	0.81	1,286	1,366	1,459
South-West	13.4	931	904	998	0.60	952	987	1,054
Wales	15.4	1,069	993	1,096	0.67	1,063	1,101	1,176
Wales I	15.7	1,090	963	1,063	0.58	921	977	1,044
Wales II	14.3	993	1,096	1,210	0.91	1,444	1,409	1,505
Density Summary of all Areas outside Greater London—								
County Boroughs ..	15.0	1,042	931	1,023	0.67	1,063	962	1,028
Other Urban Districts	14.1	979	891	983	0.57	905	891	952
Rural Districts ..	14.7	1,021	985	1,087	0.67	1,063	1,172	1,252
1934.								
England and Wales ..	14.3	1,000	928	1,000	0.64	1,000	970	1,000
Regional Summary—								
South-East	13.9	939	871	939	0.63	984	909	937
Greater London ..	13.9	939	842	907	0.61	953	810	835
Remainder of South-East.	13.9	939	917	988	0.67	1,047	1,095	1,129
North	15.5	1,047	965	1,040	0.65	1,016	996	1,027
North I	17.4	1,176	1,058	1,140	0.66	1,031	1,126	1,161
North II	16.5	1,115	1,079	1,163	0.87	1,359	1,424	1,468
North III	14.9	1,007	895	964	0.64	1,000	994	1,025
North IV	14.9	1,007	949	1,023	0.61	953	878	905
Midland	15.2	1,027	930	1,002	0.57	891	873	900
Midland I	15.4	1,041	958	1,032	0.55	859	837	863
Midland II	14.8	1,000	879	947	0.60	938	943	972
East	14.8	1,000	983	1,059	0.81	1,266	1,402	1,445
South-West	13.6	919	921	992	0.65	1,016	1,085	1,119
Wales	15.6	1,054	1,009	1,087	0.65	1,016	1,109	1,143
Wales I	16.1	1,088	983	1,059	0.59	922	1,031	1,063
Wales II	14.3	966	1,097	1,182	0.82	1,281	1,301	1,341
Density Summary of all Areas outside Greater London—								
County Boroughs ..	15.5	1,047	960	1,034	0.68	1,063	1,003	1,034
Other Urban Districts	14.5	980	909	980	0.59	922	934	963
Rural Districts ..	15.0	1,014	1,006	1,084	0.67	1,047	1,206	1,243

The highest rates occur as a rule in the rural districts. It will be seen that whereas for all births the rural aggregate rate is 8·4 per cent. above the mean, for illegitimate only it is 24·3 per cent. above.

Sex Proportions at Birth.—Births of males in England and Wales in 1934 numbered 306,874 and those of females 290,768 ; the proportion of male to female births was 1,056, 1,049, and 1,055 to 1,000 for legitimate, illegitimate, and total births respectively. The corresponding proportions for total births in each year from 1894 onwards and in groups of years since the commencement of registration are shown in Table C (Part II). The extreme range since 1838 has been from 1,032 per 1,000 in 1898 to 1,060 in 1919. During this period the highest ratio recorded prior to the war was 1,054 in 1843 and 1844. The current ratio of 1,055 is exceeded only by that of 1,060 in 1919.

The extent to which different classes of area or portions of the country contribute to the preponderance of male births is shown in Table CXVII. The only areas which show a decrease between 1933 and 1934 are North I, North II, and Wales II. In 1931 the

Table CXVII.—Male Births per 1,000 Female Births, 1931–1934.

				1931.	1932.	1933.	1934.
				—	—	—	—
England and Wales	..	..	..	1,049	1,050	1,046	1,055
Regional Summary—							
South-East	..	..	..	1,047	1,046	1,044	1,058
Greater London	..	..	..	1,048	1,052	1,047	1,061
Remainder of South-East	..	..	..	1,046	1,036	1,039	1,053
North	..	..	..	1,045	1,050	1,048	1,052
North I	..	..	..	1,050	1,054	1,065	1,058
North II	..	..	..	1,072	1,036	1,055	1,044
North III	..	..	..	1,041	1,046	1,050	1,052
North IV	..	..	..	1,040	1,054	1,039	1,052
Midland	..	..	..	1,054	1,053	1,042	1,061
Midland I	..	..	..	1,052	1,048	1,040	1,063
Midland II	..	..	..	1,058	1,064	1,047	1,059
East	..	..	..	1,029	1,040	1,038	1,056
South-West	..	..	..	1,073	1,057	1,046	1,047
Wales	..	..	..	1,056	1,057	1,059	1,051
Wales I	..	..	..	1,060	1,054	1,044	1,058
Wales II	..	..	..	1,043	1,066	1,103	1,031
Density Summary of all Areas outside Greater London—							
County Boroughs	..	..	..	1,043	1,047	1,044	1,061
Other Urban Districts	..	..	..	1,057	1,050	1,052	1,045
Rural Districts	..	..	..	1,048	1,052	1,039	1,054

highest ratio, 1,073, occurred in the South-West, and the lowest, 1,029, in the East; in 1932, the highest, 1,066, in Wales II, and the lowest, 1,036, in the South-East (excluding Greater London) and in North II; while, in 1933, the highest, 1,103, was in Wales II,

and the lowest, 1,038, in the East. The inconsistency of some of these ratios is illustrated by Wales II which was the highest in 1932 and 1933 and the lowest in 1934, and by the South-West which fell from 1,073 in 1931 to 1,057 in 1932 and to 1,046 in 1933. A similar inconsistency is revealed when the figures are analysed according to degree of urbanization. The ratio for the county boroughs was highest in 1934, lowest in 1931 and 1932; for the urban districts, highest in 1931 and 1933, lowest in 1934; for the rural districts, highest in 1932, lowest in 1933.

STILLBIRTHS.

Stillbirths registered in England and Wales as a whole are shown for each year in Part II of the Statistical Review, Table B, and for each quarter in Table D. The numbers occurring in metropolitan and county boroughs, and in the aggregates of urban and of rural districts in administrative counties are shown in Part I, Table 18, to which is prefixed a summary for the several larger regions into which the country is divided.

In England and Wales the stillbirths registered during 1934 numbered 25,209 in all, 13,690 being males and 11,519 females; the numbers representing 40, 43 and 38 per 1,000 total births or 42, 45 and 40 per 1,000 live births respectively. The total compares with the figure of 25,084 recorded last year.

Prior to 1st July, 1927, the date on which stillbirth registration became operative in this country under the Births and Deaths Registration Act, 1926, the only record of stillbirths in England and Wales was that obtained from notifications received by Medical Officers of Health. These were published in the successive reports, from 1919 onwards, of the Chief Medical Officer to the Ministry of Health and were summarised in the 1927 Statistical Review, (Text p. 128).

The distribution of the total according to sex, legitimacy and geographical incidence in 1933 and 1934 is summarised in rate form in Table CXVIII: in this Table columns have been included from which comparisons may be made between the incidence of stillbirths on the one hand and that of live births or of infant mortality on the other. Wherever the numbers are large enough to form a satisfactory basis of fact, the frequency of stillbirth amongst males is shown to be definitely greater than it is amongst females. The male excess for legitimate births is the same as that of last year, and it is maintained with considerable uniformity throughout the several sections distinguished. For illegitimate births, also, male excess is usually found, but exceptions are recorded in 1934 in Greater London, North I, North II, Midland I and Wales II. As between legitimate and illegitimate births, the latter exhibit the higher rates in all sections (the females of Wales I excepted), the amount of the excess being on a somewhat larger scale than that indicated in the comparison between the sexes.

Table CXVIII.—Stillbirths, 1933 and 1934.

Area.	Stillbirths per 1,000 total births.					Stillbirths per 1,000 total births and Live Births per 1,000 population expressed in relation to correspond- ing rate for England and Wales taken as 1,000.				Stillbirths per 1,000 total births and Infant Mortality per 1,000 live births expressed in relation to corresponding rate for England and Wales taken as 1,000.		
	Total.	Legitimate.		Illegitimate.		Stillbirths.		Live Births.		Still- births.	Deaths under 4 weeks.	Deaths under 1 year.
		Males.	Fe- males.	Males.	Fe- males.	Legiti- mate.	Illegi- timate	Legiti- mate.	Illegi- timate			
1933.												
England and Wales ..	41·4	43	38	56	51	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Regional Summary—												
South-East	33·5	35	30	54	43	802	910	935	984	809	829	807
Greater London ..	33·0	35	29	54	43	790	910	935	952	797	815	851
Remainder of South- East.	34·2	35	32	54	43	819	910	942	1,016	826	850	741
North	46·3	48	43	59	57	1,120	1,082	1,043	1,032	1,118	1,123	1,191
North I	41·5	42	39	58	53	1,000	1,043	1,196	1,095	1,002	1,189	1,246
North II	45·5	49	41	55	58	1,098	1,054	1,094	1,413	1,099	1,055	1,105
North III	47·5	50	44	62	53	1,152	1,075	1,000	968	1,147	1,088	1,128
North IV	47·8	50	45	58	60	1,156	1,112	1,000	937	1,155	1,130	1,223
Midland	41·6	43	39	56	49	1,007	991	1,029	905	1,005	1,039	1,024
Midland I	41·4	43	39	61	44	1,002	979	1,036	889	1,000	1,056	1,032
Midland II	42·1	43	40	48	60	1,017	1,007	1,014	921	1,017	1,007	1,008
East	37·1	39	34	46	38	900	790	986	1,286	896	936	822
South-West	42·1	43	40	56	56	1,012	1,049	928	952	1,017	923	777
Wales	55·9	58	53	61	66	1,357	1,191	1,065	1,063	1,350	1,186	1,166
Wales I	55·4	57	53	65	68	1,345	1,245	1,101	921	1,338	1,220	1,223
Wales II	57·2	61	52	55	63	1,396	1,097	971	1,444	1,382	1,084	992
Density Summary of all Areas outside Greater London—												
County Boroughs..	43·8	46	40	54	53	1,059	1,006	1,043	1,063	1,058	1,074	1,175
Other Urban Dis- tricts.	44·3	45	42	54	52	1,073	998	986	905	1,070	1,039	978
Rural Districts ..	41·6	43	39	64	51	998	1,079	1,014	1,063	1,005	1,004	884
1934.												
England and Wales ..	40·5	42	37	55	53	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Regional Summary—												
South-East	33·0	35	30	45	48	810	865	943	984	815	803	889
Greater London ..	32·1	34	29	43	51	787	872	943	953	793	789	976
Remainder of South- East.	34·3	37	31	47	45	845	853	943	1,047	847	825	755
North	45·1	47	42	62	57	1,115	1,108	1,050	1,016	1,114	1,136	1,136
North I	41·4	42	40	51	57	1,025	996	1,184	1,031	1,022	1,268	1,324
North II	44·7	48	40	60	61	1,098	1,126	1,106	1,359	1,104	1,034	1,044
North III	46·6	49	43	73	50	1,150	1,139	1,007	1,000	1,151	1,092	1,014
North IV	46·0	47	44	62	59	1,135	1,126	1,014	953	1,136	1,128	1,145
Midland	41·1	43	38	54	55	1,018	1,011	1,035	891	1,015	1,022	985
Midland I	41·0	43	38	56	61	1,013	1,083	1,050	859	1,012	1,035	1,019
Midland II	41·1	43	39	49	46	1,025	885	1,007	938	1,015	996	919
East	37·3	40	33	51	40	922	839	986	1,266	921	971	842
South-West	40·1	41	39	50	49	992	926	922	1,016	990	988	844
Wales	53·2	54	50	80	61	1,313	1,321	1,064	1,016	1,314	1,225	1,101
Wales I	54·2	55	52	82	50	1,346	1,237	1,099	922	1,338	1,245	1,113
Wales II	50·2	52	45	78	81	1,213	1,479	957	1,281	1,240	1,163	1,066
Density Summary of all Areas outside Greater London—												
County Boroughs	42·2	43	40	58	53	1,043	1,024	1,050	1,063	1,042	1,078	1,119
Other Urban Dis- tricts.	44·2	47	40	62	57	1,090	1,098	986	922	1,091	1,045	941
Rural Districts ..	40·5	42	38	53	49	1,000	950	1,014	1,047	1,000	1,014	905

As regards areal comparison, Wales returns legitimate stillbirth frequencies markedly higher than those of any English sections, which among themselves decrease generally from the North, where the rate is about 12 per cent. in excess of the general average, to the South-East where it is 19 per cent. below. The contrasts are not so consistent among the illegitimate frequencies.

The relative positions in the various portions of the country and the close association in this respect between stillbirths and infantile deaths are brought out in the columns of the table in which the stillbirth rate and infantile mortality rate of the year are expressed in relation to that of the country at large, the latter being taken as 1,000 in each case. The similarity of incidence is marked in comparisons made with the mortality of the full first year of life, but the parallelism is found in certain areas to be even closer when the comparison is restricted to the deaths occurring within the four weeks immediately following birth.

Some idea of the local variation of stillbirths may be obtained from Table CXIX, which shows the boroughs and the county urban and rural aggregates exhibiting the highest and lowest rates per

Table CXIX.—Stillbirths, 1934. Range of local variation.
Stillbirths per 1,000 total births.

Metropolitan Boroughs.			County Boroughs.			Urban Aggregates (Excluding County Boroughs).			Rural Aggregates.		
			<i>Highest.</i>								
Chelsea	40	Merthyr Tydfil ..	69	Carmarthen ..	57	Caernarvon ..	62				
Finsbury	40	Oldham	59	Glamorgan ..	56	Glamorgan ..	59				
Lewisham	36	Preston	59	Monmouth ..	56	Brecon	58				
Poplar	36	Huddersfield ..	57	Pembroke ..	56	Anglesey ..	55				
		Halifax	56	Lancs.	50						
				Yorks, W.R. ..	50						
				Flint	50						
			<i>Lowest.</i>								
Fulham	28	Hastings	31	Middlesex ..	32	Bedford	29				
Hampstead	28	Norwich	31	Norfolk	32	Kent	29				
Lambeth	28	Portsmouth ..	31	Suffolk East ..	32	Sussex, West ..	29				
Bermondsey	27	West Ham	31	Sussex, East ..	31	Bucks	28				
Deptford	27	Lincoln	30	Southants ..	30	Hertford	28				
Greenwich.. ..	24	Smethwick	28	Warwick	28						

1,000 total births in 1934. Areas in which fewer than 20 stillbirths were registered have been omitted. Material for a comparison of live births with stillbirths over the years 1928–1934 is contained in Table CXX.

NATURAL INCREASE.

The excess of live births over deaths registered in England and Wales during the years 1928 to 1934 was in—

1928...	...	199,878	1932...	...	129,843
1929...	...	111,181	1933...	...	83,948
1930...	...	193,384	1934...	...	120,832
1931...	...	140,451			

From the comparable series of rates per 1,000 living population given in Table R, it will be observed that, though there is rather greater irregularity in the successive rates of natural increase, they have, over the range of years there given, followed on the whole a similar course to those followed by both birth and death-rates, and have declined with advancing years. The present rate of natural increase is 3·0 per 1,000 population. Lower rates were recorded in 1918 (0·4), 1929 (2·9) and 1933 (2·1), but, with these exceptions, it is lower than any so far recorded. It compares with a figure of approximately 10 per 1,000 in the years immediately preceding the war and over 14 per 1,000 in the period 1876–1880 when the birth-rate was at about its maximum. Stated in these terms the curve of natural increase expresses no more than that the crude

Table CXX.—Comparison of Live Births and Stillbirths, 1928–1934.

Year.	Stillbirths per 1,000—		Male births per 1,000 female births.				Illegitimate births per 1,000—			
	popula- tion of all ages.	total births (live and still).	Live births.		Stillbirths.		Live births.		Stillbirths.	
			Total.	Illeg.	Total.	Illeg.	M.	F.	M.	F.
Col. (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1928 ..	0·70	40·1	1,044	1,041	1,210	1,297	44·9	45·1	64·8	60·5
1929 ..	0·68	40·0	1,043	1,021	1,259	1,311	45·1	46·0	62·9	60·4
1930 ..	0·69	40·8	1,044	1,049	1,235	1,233	45·9	45·6	61·0	61·1
1931 ..	0·67	40·9	1,049	1,059	1,248	1,250	44·6	44·2	61·8	61·7
1932 ..	0·66	41·3	1,050	1,042	1,216	1,197	43·8	44·2	56·5	57·3
1933 ..	0·62	41·4	1,046	1,021	1,180	1,137	43·3	44·3	56·1	58·2
1934 ..	0·62	40·5	1,055	1,049	1,188	1,102	43·0	43·3	56·2	60·7

birth-rate has hitherto been greater than the crude death-rate, and that the decline in the former has advanced at a greater rate than the fall in the latter. From the general continuity of the series it may be inferred that the number of births will continue to exceed the deaths for some years, and that, apart from the results of migration, the population will continue to increase during such period though, naturally, at a slower pace.

What must not be inferred from mere excesses of births over deaths or from their alternative expressions as rates per 1,000 total population, is that the continuance of current conditions regarding fertility and mortality would be sufficient to ensure a continuous increase in the national population, both now and in the future. Attention has been drawn in previous Reports to the reduction in the population, which, apart from immigration, must inevitably take place in the near future if the current trend in the birth-rate persists.

Some light is thrown on the subject by a comparison of the actual population at the mid-point of any period with the hypothetical population that the births during the same period would support. This is done in Table CXXI in which the data for a

Table CXXI.—England and Wales ; Comparison of Actual with Life-Table Population, 1871 to 1934.
Numbers in thousands.

Period.	Population supported by 100,000 births according to the Official Life Tables.		Actual Mean Annual Births of Period.		Hypothetical Population which would be supported by current numbers of births according to Life Table Rates.			Actual Mean estimated Popula- tion.	Ratio per cent. of Life-Table Population to Actual Population.	Hypothetical Crude Birth-rate needed to main- tain actual Population per 1,000.	Actual Crude Birth-rate per 1,000.	Actual Mean Natural Increase per 1,000.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
		M.	F.	M.	F.	M.	F.	P.	P.	P.	P.	P.	
1871-1880	..	4,135	4,462	437	421	18,070	18,785	36,855	24,343	151	23.3	35.4	14.0
1881-1890	..	4,366	4,718	453	436	19,778	20,570	40,348	27,488	147	22.1	32.4	13.3
1891-1900	..	4,413	4,777	466	449	20,565	21,449	42,014	30,643	137	21.8	29.9	11.7
1910-1912	..	5,150	5,535	450	433	23,175	23,967	47,142	36,071	131	18.7	24.5	10.7
1920-1922	..	5,562	5,958	442	420	24,584	25,024	49,608	37,886	131	17.4	22.8	10.3
1930-1932	..	5,874	6,288	323	309	18,973	19,430	38,403	39,952	96	16.5	15.8	3.9
1933	..	—	—	297	283	17,446	17,795	35,241	40,350	87.	16.5	14.4	2.1
1934	..	—	—	307	291	18,033	18,298	36,331	40,467	90	16.5	14.8	3.0

series of periods from 1871–1880 are shown. Columns (2) and (3) give the population in thousands that would be supported by 100,000 births according to the official life-tables of each period. The application of these numbers to the numbers of births actually registered, columns (4) and (5), gives the hypothetical population shown in columns (6) and (7) that the births would support. The sum of the numbers for the sexes, column (8), is compared with the estimated actual population, column (9), by means of the percentage ratios in column (10). Columns (11) and (12) give the hypothetical and actual crude birth rates, and column (13) the actual natural increase. It is to be noted from columns (4) and (5) that the numbers of births attained a maximum in the period 1891–1900, and have since declined at increasing speed. The percentages in column (10) show that in the earlier periods the births were sufficiently numerous not only to maintain the population but also to provide a substantial balance for emigration. In recent years the percentage ratio of the life-table population to the actual population has fallen below 100 and, as shown in Table S (Part II), the balance of migration has been in an inward direction.

The method used in Table CXXI for the comparison of life-table with actual populations of the same period is not free from objection, but the series of results obtained in columns (10) and (11) are consistent among themselves and are of some interest in connection with other series of rates with which they may be compared, and for which a greater degree of absolute significance may be claimed.

Table CXXII shows for 1931–34 the rate of natural increase in various sections of the country, representing the combined effect of the several sectional birth and death rates. Attention may be drawn to the large differences between the different sections of the regions, namely, North I (Durham and Northumberland), and North IV (Cheshire and Lancashire), and between Wales I (Brecknockshire, Carmarthenshire, Glamorganshire and Monmouthshire), and Wales II (the remainder of Wales).

A comparison of the rates of natural increase in certain selected years is provided in Table CXXIII in which the countries shown are the same as in Table Q. The only countries in which there is a greater natural increase in 1934 than in 1911–13 are France and Spain; and comparatively small decreases occur in Ireland, Portugal and Japan. The largest decrease is recorded for Austria; and two countries—England and Wales and Sweden—have a rate in 1934 which is less than one-third of that of 1911–13.

Table S, which provides an analysis of migration from 1911 onwards, shows that the balance of passenger movement, which for many years had been in the outward direction, has been reversed during the last five years. The net passenger movement into the United Kingdom was 54,509 in 1934. This contrasts with about 48,000 in 1933, 77,000 in 1932 and 91,000 in 1931, and with an outward balance of 100,000 so recently as 1926.

GREAT BRITAIN AND IRELAND.

Population.—The first complete census of the United Kingdom was taken in 1821, when the population numbered 20,893,584 persons; during the 100 years 1821–1921 this number increased by about 126 per cent., the sum of the census figures for Great Britain and of the estimated population of Ireland in June, 1921, amounting to 47,123,196. Up to the date when the 1931 Census

Table CXXII.—Natural Increase per 1,000 living, 1931–1934.

					1931.	1932.	1933.	1934.
					—	—	—	—
England and Wales .. .. .	..	..	..	..	3·5	3·3	2·1	3·0
Regional Summary—								
South-East .. .. .	..	..	..	..	3·4	3·0	2·0	2·6
Greater London .. .. .	..	..	..	..	3·9	3·5	2·3	2·9
Remainder of South-East .. .. .	..	..	..	..	2·9	2·3	1·7	2·2
North .. .. .	..	..	..	..	3·2	3·4	1·9	3·2
North I .. .. .	..	..	..	..	6·1	6·4	4·9	5·2
North II .. .. .	..	..	..	..	4·2	4·5	3·0	4·1
North III .. .. .	..	..	..	..	2·7	2·7	1·6	2·9
North IV .. .. .	..	..	..	..	2·3	2·5	0·8	2·4
Midland .. .. .	..	..	..	..	4·6	4·1	2·9	3·9
Midland I .. .. .	..	..	..	..	4·7	4·2	3·0	4·0
Midland II .. .. .	..	..	..	..	4·6	4·2	2·8	3·7
East .. .. .	..	..	..	..	3·4	2·9	1·9	3·0
South-West .. .. .	..	..	..	..	1·0	0·8	0·4	0·8
Wales .. .. .	..	..	..	..	3·4	3·2	2·3	3·2
Wales I .. .. .	..	..	..	..	4·5	4·2	3·0	4·2
Wales II .. .. .	..	..	..	..	0·7	0·8	0·1	0·4
Density Summary of All Areas outside Greater London—								
County Boroughs .. .. .	..	..	..	..	3·4	3·5	1·9	3·2
Other Urban Districts .. .. .	..	..	..	..	3·1	2·9	1·7	2·7
Rural Districts .. .. .	..	..	..	..	3·7	3·4	2·6	3·2

was taken there was a further increase of 4 per cent. The populations of the several portions of the United Kingdom for each census year from 1821 and for individual years from 1895 are set out in Table A.

Marriages.—The marriages during the year 1934 numbered 401,737, corresponding to a rate of 16·2 persons married per 1,000 of the total population. This rate was 1·1 per 1,000 above the corresponding rate in 1933 and 1·3 above the average rate in the ten years 1921–1930.

Births.—The live births registered in the year 1934 numbered 769,740, and were in the proportion of 15·5 per 1,000 of the total population. This rate was 0·4 above the corresponding rate in 1933 and 3·3 per 1,000 below the average in the ten years 1921–1930.

Deaths.—The deaths registered in the year 1934 numbered 597,155, and were in the proportion of 12·0 per 1,000 of the total population. This rate was 0·5 per 1,000 below the corresponding rate in 1933, and 0·5 below the average in the ten years 1921–1930.

Infant Mortality.—The deaths of infants under one year of age during the year 1934 numbered 47,349, representing a rate of 62 per 1,000 live births. This rate was 4 per 1,000 below that recorded in 1933 and 12 per 1,000 below the average in the ten years 1921–1930.

Table CXXIII.—Natural Increase Rates in certain Countries, 1911–1934.

(Derived from birth and death rates given in the *League of Nations Annual Epidemiological Report*, 1934, pp. 67–69.)

	1911– 1913.	1921.	1926.	1931.	1932.	1933.	1934.
England and Wales ..	10·3	10·3	6·2	3·5	3·3	2·1	3·0
Scotland ..	10·4	11·6	8·0	5·7	5·1	4·4	5·1
Northern Ireland ..	6·7	8·3	7·5	6·1	5·8	5·1	6·1
Irish Free State ..	6·3	5·3	6·5	4·8	4·3	5·7	6·2
Austria ..	6·1	6·2	4·2	1·9	1·3	1·1	0·8
Belgium ..	7·5	8·1	5·8	5·0	4·5	3·3	3·8
Czecho-Slovakia ..	9·2	11·5	9·0	7·1	6·9	5·5	5·5
Denmark ..	13·3	13·0	9·5	6·6	7·0	6·7	7·4
Finland ..	12·1	10·3	8·3	6·2	6·1	4·5	5·7
France ..	0·6	3·0	1·4	1·3	1·5	0·5	1·0
Germany ..	12·2	11·2	7·8	4·8	4·3	3·5	7·1
Hungary ..	11·4	10·6	10·7	7·1	5·5	7·3	7·0
Italy ..	12·5	12·4	10·5	10·1	9·1	10·0	10·1
Netherlands ..	15·0	15·3	14·0	12·6	13·0	12·0	12·3
Norway ..	12·1	12·7	8·8	5·4	5·4	4·6	5·0
Portugal ..	14·4	11·6	13·3	12·9	12·8	11·9	11·9
Roumania ..	18·0	15·8	13·9	12·5	14·2	13·3	11·7
Spain ..	9·0	9·0	10·7	10·1	11·8	11·3	10·2
Sweden ..	9·7	9·1	5·0	2·3	2·9	2·5	2·5
Switzerland ..	9·0	8·1	6·5	4·6	4·6	5·0	4·9
Australia ..	17·1	15·0	12·6	9·5	8·3	7·9	7·1
Canada ..	—	17·8	13·3	13·1	12·6	11·3	11·0
New Zealand ..	17·0	14·6	12·3	10·1	9·1	8·6	8·0
South Africa (whites)	21·7	18·0	16·6	16·0	14·2	14·3	13·7
United States of America	—	12·6	8·4	6·9	6·5	5·9	6·1
Japan ..	13·6	12·4	15·6	13·2	15·2	13·7	11·9

BIRTHS AND DEATHS AT SEA.

Marine Register Book.—In accordance with the Births and Deaths Registration Act of 1874 and the Merchant Shipping Act of 1894, Commanding Officers of ships trading to or from British ports are required to transmit returns of all births and deaths occurring on board their ships to the Registrar-General of Shipping and Seamen, who furnishes certified copies of such returns to the Registrars-General of Births and Deaths for England, Scotland, Northern Ireland and the Irish Free State. Similar returns are furnished to the Registrars-General of Births and Deaths by Officers

Table CXXIV.—Great Britain and Ireland. Vital Statistics.
1921–30 and 1931–4.

				Great Britain and Ireland.	England and Wales.	Scot- land.	Northern Ireland.	Irish Free State.
<i>Estimated Population in the middle of the year 1934 (in thousands).</i>								
Males	..	..	..	23,944	19,412	2,375	622	1,535
Females	..	..	..	25,749	21,055	2,559	657	1,478
Persons	..	..	..	49,693	40,467	4,934	1,279	3,013
<i>Marriages.</i>								
1934	..	..	..	401,737	342,307	36,949	8,230	14,251
Persons married per 1,000 living :—								
1921–1930	..	..	..	14.9	15.5	13.8	12.1	9.5
1931	..	..	..	14.9	15.6	13.5	11.8	8.9
1932	..	..	..	14.6	15.3	13.6	11.0	8.8
1933	..	..	..	15.1	15.8	13.9	12.0	9.3
1934	..	..	..	16.2	16.9	15.0	12.9	9.5
<i>Births.</i>								
1934	..	..	..	769,740	597,642	88,836	25,365	57,897
Per 1,000 living :—								
1921–1930	..	..	..	18.8	18.3	21.5	22.1	20.2
1931	..	..	..	16.5	15.8	19.0	20.5	19.3
1932	..	..	..	15.9	15.3	18.6	19.9	18.9
1933	..	..	..	15.1	14.4	17.6	19.4	19.2
1934	..	..	..	15.5	14.8	18.0	19.8	19.2
<i>Deaths.</i>								
1934	..	..	..	597,155	476,810	63,741	17,521	39,083
Per 1,000 living :—								
1921–1930	..	..	..	12.5	12.1	13.7	15.1	14.5
1931	..	..	..	12.6	12.3	13.3	14.4	14.5
1932	..	..	..	12.4	12.0	13.5	14.1	14.5
1933	..	..	..	12.5	12.3	13.2	14.3	13.5
1934	..	..	..	12.0	11.8	12.9	13.7	13.0
<i>Deaths of Infants under 1 year.</i>								
1934	..	..	..	47,349	35,017	6,901	1,767	3,664
Per 1,000 live births :—								
1921–1930	..	..	..	74	72	89	81	70
1931	..	..	..	69	66	82	73	69
1932	..	..	..	69	65	86	83	72
1933	..	..	..	66	64	81	80	65
1934	..	..	..	62	59	78	70	63

in command of His Majesty's ships. The returns of births and deaths at sea received by the Registrar-General constitute the "Marine Register Book." During the year 1934 this register was increased by the addition of 49 entries of birth and 896 entries of death.

REGISTRATIONS OF BIRTHS, DEATHS AND MARRIAGES.

Progress of Registration.—The names in the alphabetical indexes of births, deaths and marriages recorded in the national registers of England and Wales were increased during the year 1934 by 1,759,066, this addition raising the total of names in the indexes, which at the end of 1934 embraced a period of $97\frac{1}{2}$ years, to 164,881,140 (Table T).

Searches and Certificates.—Besides the certified copies of the registered births, deaths and marriages kept in England and Wales pursuant to the Registration Acts, a large number of other registers and records are deposited in this Office under statute or other arrangement. A revised list of these various registers and records will be found on pages 149–155 of the Review for 1925. Searches may be made in any of these registers, and certificates obtained on payment of the prescribed fees.

Table CXXV affords an indication of the extent to which the copies of the records kept in this Office have been utilized by the public for legal evidence of births, deaths and marriages since 1866.

The 424,943 gratuitous searches during 1934 comprise 40,224 searches made for the purpose of verifying the ages of persons aged 70 and upwards claiming old age (non-contributory) pensions and 213,030 for persons claiming pensions under the Old Age Contributory Pensions Acts, 1925 and 1929; 98,617 for verification purposes in connexion with claims to widows' and orphans' pensions under the Widows', Orphans', etc., Acts, 1925 and 1929; 26,716 to assist dependents of men of H.M. Forces to produce evidence of marriage and of the births of children in connexion with claims to naval and military pensions, separation allowances, etc., and to verify the ages of certain classes of youths and men in connexion with service in the Army, Navy and Air Force; 29,608 for verification of age, etc., in connexion with National Health and Unemployment Insurance; and 16,748 for other public purposes.

Offences against the Registration Acts.—In 1934 sixteen persons, on prosecution by order of the Registrar-General, were convicted of offences in connexion with registration. The offences for which convictions were obtained were as under :—

(a) For failing to register a birth	4
(b) For failing to re-register a birth under the Legitimacy Act	1
(c) Giving false information when registering a birth, stillbirth or death	10
(d) Giving false information for the purpose of procuring marriage	1

In addition to the above cases proceedings were taken and convictions obtained by the Director of Public Prosecutions in cases reported through the Registrar-General, the offences including those of false registration and making false declarations when giving notice of marriage.

Table CXXV.

Years.	Total Searches.	Gratuitous Searches.	Searches paid for by Fees.	Certificates Issued.	Amount Received.		
					£	s.	d.
1866 (52 weeks) ..	12,135	—	12,135	10,017	1,860	15	6
1875 (52 weeks) ..	26,356	—	26,356	20,282	3,879	15	6
1885 (52 weeks) ..	36,450	—	36,450	27,682	5,317	13	6
1895 (52 weeks) ..	53,289	—	53,289	35,727	7,200	12	6
1905 (52 weeks) ..	65,142	—	65,142	50,310	9,611	9	0
1906 (52 weeks) ..	64,340	—	64,340	49,429	9,458	6	0
1907 (52 weeks) ..	69,249	—	69,249	53,058	10,194	9	0
1908 (53 weeks) ..	72,370	—	72,370	54,870	10,550	8	0
1909 (52 weeks) ..	132,169	58,626*	73,543	54,674	10,568	8	0
1910 (52 weeks) ..	126,716	51,347	75,369	57,019	10,939	5	6
1911 (52 weeks) ..	140,496	65,491	75,005	56,347	10,875	6	0
1912 (52 weeks) ..	149,752	69,151	80,601	61,143	11,752	6	0
1913 (52 weeks) ..	150,540	71,225†	79,315	60,356	11,613	19	0
1914 (53 weeks) ..	188,040	104,593	83,447	65,817	12,482	11	6
1915 (52 weeks) ..	202,939	118,788	84,151	69,746	13,007	10	0
1916 (52 weeks) ..	303,334	197,669	105,665	88,265	16,379	17	0
1917 (52 weeks) ..	272,199	177,403	94,796	80,374	14,859	14	0
1918 (52 weeks) ..	255,462	146,504	108,958	90,898	16,889	0	0
1919 (52 weeks) ..	301,913	170,670	131,243	107,067	20,017	14	6
1920 (53 weeks) ..	284,194	149,447	134,747	108,684	20,415	0	0
1921 (52 weeks) ..	258,461	131,167	127,294	99,911	18,949	10	6
1922 (52 weeks) ..	263,047	143,088	119,959	90,400	19,028	12	6
1923 (52 weeks) ..	269,822	144,118	125,704	93,701	20,875	16	0
1924 (52 weeks) ..	337,521	178,990	158,531	121,890	27,109	15	0
1925 (53 weeks) ..	488,781	339,790	148,991	115,378	25,610	2	6
1926 (52 weeks) ..	541,916	407,687	134,229	105,560	23,305	6	6
1927 (52 weeks) ..	1,002,345	854,084	148,261	115,009	25,733	16	0
1928 (52 weeks) ..	600,678	452,953	147,725	114,731	25,678	17	0
1929 (52 weeks) ..	550,742	402,853	147,889	116,768	25,903	18	0
1930 (52 weeks) ..	1,207,344	1,053,047	154,297	121,549	26,964	12	0
1931 (53 weeks) ..	651,414	509,267	142,147	109,163	24,323	1	6
1932 (52 weeks) ..	598,624	464,985	133,639	104,420	23,086	13	0
1933 (52 weeks) ..	591,668	455,664	136,004	108,050	23,790	11	0
1934 (52 weeks) ..	562,849	424,943	137,906	111,265	24,378	14	6

* Including some searches made in 1908.

† In addition, there were 91,917 gratuitous searches made for National Insurance Audit purposes.

RE-REGISTRATION OF BIRTHS UNDER THE LEGITIMACY ACT, 1926.

Under the Legitimacy Act, 1926, an illegitimate child of parents who married after the birth of the child was, subject to certain conditions, legitimated; and the Act contained incidental provision

to enable the births of such children to be re-registered. During the year 1934 authority was issued for the re-registration of the births of 3,095 children, being 127 more than the preceding year.

The number of authorities issued during each quarter is as follows :—

Quarter.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.
March ...	1,265	1,401	1,075	996	981	854	752	722
June ...	1,256	1,170	1,105	1,001	908	762	724	777
September ...	1,381	1,242	933	1,006	797	709	718	798
December ...	1,593	1,070	933	986	825	819	774	798
Totals ...	5,495	4,883	4,046	3,989	3,511	3,144	2,968	3,095

ADOPTION OF CHILDREN UNDER THE ADOPTION OF CHILDREN ACT, 1926.

The Adoption of Children Act, 1926, provided for the legal adoption of children by Order of the Court, and established a system of registration of such adoptions in an Adoption Register to be kept by the Registrar-General. The number of children whose adoption was registered during 1934 is 4,758. Table CXXVI furnishes an analysis of the Adoption Orders made by reference to the several classes of Courts and the quarterly distribution of the total figure.

Table CXXVI.

Year.	Number of Adoption Orders dealt with.				Corresponding number of children, <i>i.e.</i> , Entries made in Adopted Children Register.				
	Total.	High Court.	County Court.	Court of Summary Jurisdiction.	Year's Total.	March Quarter.	June Quarter.	September Quarter.	December Quarter.
1927 ..	2,943	133	184	2,626	2,967	329	990	774	874
1928 ..	3,278	124	236	2,918	3,303	851	844	705	903
1929 ..	3,294	72	224	2,998	3,307	722	787	857	941
1930 ..	4,511	74	317	4,120	4,517	1,084	1,196	983	1,254
1931 ..	4,119	68	274	3,777	4,127	873	1,049	1,046	1,159
1932 ..	4,465	38	264	4,163	4,467	1,073	1,178	1,000	1,216
1933 ..	4,524	61	262	4,201	4,528	1,029	1,258	1,004	1,237
1934 ..	4,756	45	290	4,421	4,758	1,063	1,265	1,075	1,355

PARLIAMENTARY AND LOCAL GOVERNMENT ELECTORS.

The returns of Parliamentary and Local Government Electors published in Tables U and V summarise the Register of Electors.

compiled under the Representation of the People (Equal Franchise) Act of 1928 in respect of the qualifying period of three months ending on the 1st June, 1934.

The particulars have been taken from statements furnished to the Registrar-General by the Registration Officers of the several areas, or in the case of a University forming the whole or part of a University constituency, by the Chancellor, Registrar or other officer dealing with Parliamentary registration.

Registration Officers were instructed that the return of Parliamentary Electors should be the net total of individual Parliamentary Electors in each constituency, all duplicate entries being omitted from the count. In the case of Local Government Electors the number of names on the register was to be given. The instructions further directed that the names of "out voters" (that is, persons whose names appear twice in the Register, by reason of a claim under Rule 24 of the First Schedule to the 1918 Act) should be counted once only in respect of that qualification.

Table U refers to Parliamentary electors, and shows for each Parliamentary constituency in England and Wales, including the University constituencies, the numbers of males and females on the Register, and also the numbers registered in respect of business premises qualifications and the numbers on the absent voters list.

Table V refers to Local Government electors, and shows the numbers of each sex registered in respect of every local government area, *i.e.*, county borough, metropolitan borough, municipal borough, urban district and rural district in England and Wales.

The figures for the whole country are summarised in Table CXXVII and are shown in conjunction with the figures of previous Registers made since the passing of the 1918 Act.

It will be observed that the sex distribution of the electorate which, in respect of the Parliamentary Register, was formerly in the proportion of about 1·3 men to each woman, was completely altered by The Representation of the People (Equal Franchise) Act of 1928. That Act, which placed women on the same footing as men in regard to the franchise, added about 4½ million women to the Parliamentary electorate and nearly 1¼ million to the Local Government electorate, and as a consequence women now outnumber men by approximately 12 per cent. in the case of each. The somewhat abnormal increase in the male electorate between 1928 and 1929—an interval of six months, it should be noted, in place of the usual 12 months period—cannot be explained by the new Act which left the male franchise unaltered apart from a trifling addition—approximately 3,700—in respect of men registered in respect of their wives' occupation of business premises, and must be mainly ascribed to the special procedure, adopted for the first time in connexion with the 1929 register, of the universal service of a compulsory form of return which disclosed and made good omissions from the registers on the pre-1928 Act franchise.

Including a certain amount of plural representation in the case of those persons registered in more than one constituency by reason of their possessing the necessary residence or business qualification, or being entitled to be registered in respect of a University constituency, the total Parliamentary electorate of 27,031,162 represents 66·8 per cent. of the estimated total population, or 65·6 per cent. of the male and 67·9 per cent. of the female population; in the case of the rather more restricted Local Government franchise, the numbers are somewhat less and the proportions correspondingly lower, the total electorate being 49·4 per cent. of the whole population, or 48·6 per cent., and 50·1 per cent. in the case of males and females separately.

Table CXXVII.—Parliamentary and Local Government Electors, 1918-1934.

Register.	Parliamentary Register (including University Constituencies).					Local Government Register.		
	Persons.	Males.	Females.	Business Premises Qualifica- tions. — Males only up to 1928. Persons from 1929 (included in Cols. b-d).	Persons on Absent Voters' List (included in Cols. b-d).	Persons.	Males.	Females.
<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>k</i>
1918 (Autumn)	17,222,983	10,281,054	6,941,929	159,013	3,362,028	13,930,130	6,998,665	6,931,465
1919 "	17,465,638	10,234,887	7,230,751	205,461	1,157,061	14,361,123	7,176,019	7,185,104
1920 "	17,584,552	10,176,750	7,407,802	203,471	254,866	14,712,453	7,364,912	7,347,541
1921 "	17,795,784	10,237,344	7,558,440	194,737	185,227	15,019,348	7,527,861	7,491,487
1922 "	18,001,692	10,312,248	7,689,444	199,904	162,901	15,322,625	7,700,108	7,622,517
1923 "	18,388,833	10,498,179	7,890,654	208,694	151,953	15,691,962	7,873,461	7,818,501
1924 "	18,806,842	10,719,922	8,086,920	211,257	165,564	16,015,033	8,007,384	8,007,649
1925 "	19,167,275	10,897,545	8,269,730	217,509	167,406	16,345,290	8,157,607	8,187,683
1926 "	19,346,954	10,982,128	8,364,826	206,199	161,460	16,574,549	8,284,181	8,290,368
1927 "	19,585,972	11,094,031	8,491,941	205,538	155,436	16,865,666	8,444,718	8,420,948
1928 "	19,866,649	11,226,396	8,640,253	205,793	154,432	17,179,487	8,608,017	8,571,470
1929 (Spring)	25,095,793	11,866,794	13,228,999	371,594	174,731	18,620,395	8,825,225	9,795,170
1930 (Autumn)	25,730,507	12,101,108	13,629,399	364,762	174,270	18,879,147	8,905,768	9,973,379
1931 "	26,135,944	12,288,852	13,847,092	365,090	174,274	19,156,018	9,036,870	10,119,148
1932 "	26,439,713	12,440,109	13,999,604	367,684	172,234	19,418,156	9,160,409	10,257,747
1933 "	26,715,526	12,578,340	14,137,186	365,734	168,684	19,659,678	9,274,801	10,384,877
1934 "	27,031,162	12,735,465	14,295,697	367,912	166,102	19,984,911	9,428,765	10,556,146

Of the total of the Parliamentary Registers, the bulk, viz. 26,928,554, represents the aggregate voting strength in the 509 geographical constituencies into which England and Wales is divided, the balance of 102,608 representing the five University constituencies. Eleven of the Boroughs, and three University constituencies, however, each return two members, so that the total representation in Parliament is by 528 members, 520 in respect of the geographical divisions, with an average electorate of 51,786 per member and eight in respect of the Universities, with an average electorate of 12,826.

MISCELLANEOUS.

Other tables appearing in Part II of the Statistical Review which have not formed the subject of special comment in the foregoing pages are :—

Table W, showing the Population, Births, Deaths, Infant Mortality and Marriages, with Rates in British Islands and Dominions, 1934.

Tables X and Y, showing the census populations respectively of the British Empire, Dominions, etc., and of Foreign Countries.

Appendix, showing changes in boundaries of various local government districts and the areas and populations involved.

WEATHER OF THE YEAR 1934. ENGLAND AND WALES.

(Contributed by the Air Ministry.)

The year 1934 was the third year in succession with mean temperature above the average in all districts. The water shortage over most of England due to a deficiency of rainfall that had been in evidence since November 1932 became more acute in this year until the very wet weather of December, for which month the general precipitation for England and Wales was 190 per cent. of the average. In consequence of this wet month, the percentage figure for the whole year was below 90 only in England E. and the Midlands, with 85 and 87 per cent. respectively, whereas in the previous year it had been below 90 in all districts. In England N.E. there was even a slight excess.

The deviation of mean temperature above the average was about a degree for the country as a whole, and was due largely to the warmth of June, July and September, and the phenomenal mildness of December. Temperature approached 90° locally on June 17th, and reached 90° in various parts of England on July 9th, 10th and 11th. At Southport, July was the warmest month experienced for at least 63 years.

The coldest spells, which occurred in the last ten or eleven days of January and in February, rarely gave rise to temperatures below 20°.

Sunshine was generally rather above the average, due mainly to the large excess in July, when there was nearly 40 per cent. more than the average over a large part of England, and an excess of 30 per cent. in England S.W., the least sunny district. In the last three months of the year, dull weather predominated to such an extent that only about 70 per cent. of the average sunshine was recorded.

There were some rather severe gales in January and December, but it was not a very stormy year.

Further information.—Tables relating to meteorological elements are given in Part I (Tables 30–32). A description of the weather of each month appears in the Quarterly Return of the Registrar-General and a summary of the observations at Greenwich for each month of the year appears in Table XI of the Return for the fourth quarter.

Charts showing the distribution of pressure, temperature, sunshine and rainfall for the year, together with summaries of the observations at numerous stations will be found in the Annual Summary of the Monthly Weather Report issued by the Meteorological Office.

A list of the publications of the Meteorological Office will be found in "List M" issued by H.M. Stationery Office.

SUMMARISED REFERENCE TO SPECIAL STUDIES OR OTHER NON-ANNUAL FEATURES INCLUDED IN THIS REVIEW.

Mortality during the first two years of life, according to the season of the year in which infants are born (pp. 28–34).

There is evidently a considerable disadvantage in survival at the end of the second year for children born in the winter months compared with those born at other seasons. Despite the fact that each group of children has, by the end of 2 years from birth, been twice exposed to a complete round of the seasons, out of each 1,000 children born in 4 winters an average of 89 died within 2 years, whereas out of each 1,000 born in summer only 75 died. For spring the proportion was 77 and for autumn 82. During the first year of life the handicap of the winter-born infant in comparison with the summer-born was equivalent to a 14 per cent. excess in mortality, and during the second year of life to a 42 per cent. excess.

Mortality in the County Boroughs and Administrative Counties in 1931–34 compared with 1911–14 (pp. 144–150).

In 1911–14 the standardized mortality in the 83 towns now classed as county boroughs ranged from 74 to 150 per cent. of the national mortality, but by 1921–24 the range had contracted to 83–140 and by 1931–34 to 87–137. This narrowing of the range must, it is suggested, be attributed in the main to the effects of public hygiene and amelioration

of the conditions of life in the towns where mortality was worst in 1911-14. Whilst 54 towns had rates of 14 per 1,000 or more 20 years previously, not one gave an average rate as high as 14 in 1931-34, and 31 gave rates below 10, contrasted with only one in 1911-14. The improvement in the chances of survival has been much greater in the less favourably circumstanced industrial towns during the 20 years than in the more happily situated group, for the 8 towns with highest mortality in 1911-14 register a 33 per cent. fall, from an average standardized rate of 19·2 to 12·9, whilst the 8 towns with lowest rates in 1911-14 show a 19 per cent. fall, from 10·9 to 8·8 per 1,000. The contrast between the town and county mortalities has diminished in the last 20 years, and the decline for the administrative counties has ranged from 29 to 12 per cent.

Relation between Mortality in the County Boroughs and Distribution of Social Classes, Housing Density and Situation, 1929-33 (pp. 150-155).

The rates of standardized mortality in 1929-33 have been correlated with three measures of environment and social conditions, namely, the zone of geographical latitude in which the town is situated, a housing density index given by the mean number of persons per room, and a social index given by the proportion of males over 14 years of age whose occupation places them in the unskilled or partly skilled classes. The resulting coefficients with mortality are each fairly high, being of the order of ·7, and for none of the factors does the correlation disappear when the effect of the other two has been eliminated. After correcting for the differences in the 3 factors by a statistical process, it is found that towns in the eastern parts of England compare favourably as regards mortality with towns in the west.

Relation between Mortality in the Administrative Counties and Distribution of Social Classes, 1931-34 (pp. 155-156).

Examination of the average standardized death rates of the counties after excluding their county boroughs and arranging them in order of the proportions of their adult male populations engaged in unskilled or partly skilled occupations, shows that there is no such association between the social distribution of their populations and mortality as is found for the large towns. It is evident that this must be due in part to the low mortality of agricultural labourers. The correlation between a social classification based on occupations and mortality would seem to be a phenomenon characteristic of town dwellers and not to be explained simply by differences in income levels.

Comparison of Mortality at various Ages in England and Wales with that in other Countries (pp. 156-158).

Rates in 1930-32 were calculated from life tables or statistics of deaths and populations for 11 countries. The lowest infant mortality rates were in Norway, and next in order came Holland, Sweden, England and Wales, South Africa, Finland, Canada, Scotland, Italy and Portugal. At the pre-school period, 1-4 years, the order was almost the same except that Canada came fourth. The Norwegian rates at this age were less than half those in England and Wales, and the Swedish rates little more than half. At ages 5-34 years Holland had the lowest rates (corrected to a standard population containing equal numbers at each age), followed by England and Wales, Canada and South Africa for males, the last-mentioned being second in order for females. At 35-64 the corrected rates for Norway and Sweden were followed in ascending order by those for Canada, Italy and England and Wales for males, and by Holland, England and Wales and Canada for females. At 65-74 the corrected rates were again lowest for Norway, England and Wales, being 10th in order for men and 7th in order for women. Male mortality at this age even in the rural districts of England and Wales was 26 per cent. above that in Norway as a whole, 15 per cent. in excess of the Swedish national rate and 7 per cent. above that of Holland. Scandinavian rates have for long compared very favourably at ages over 50 with this country, where the stress of civilisation perhaps takes a greater toll.

Maternal Mortality according to Social Class of Husband (pp. 130-131).

The rate of mortality during 1930-32 from pregnancy and child-bearing per 1,000 live births has now been calculated for the wives of men in social groups, the classification being based upon the husbands' occupations as ascertained at the Census of 1931, and as stated on the death certificates. For all married women the rate was 4.13, for classes I-II comprising wives of men in professions and allied occupations it was 4.44, for classes III and IV, defined as skilled and semi-skilled workers, it was about average, and for Class V, unskilled workers, it was 3.89. A similar classification has been made for separate causes.

Mortality from Cancer of Various Parts of the Body at different ages compared with the Average Rates in 1911-20 (pp. 85-96).

It is inferred that unless there has been some change in the diagnosis or certification to account for it, certain forms of

cancer are affecting people at a later age than was the case 20 years ago, or else those affected are living longer through earlier resort to treatment or more efficient treatment. When the various sites of cancer are examined evidence of delayed mortality is found for cancers of some organs, notably of the tongue, mouth and œsophagus in males and of the stomach and rectum in females, and for rodent ulcer in each sex. Others, such as cancer of the lip in males and of the uterus in females, show a decline at all ages, whilst others again, such as intestinal, lung and breast cancers show an increase at all ages. The mean age at death from cancer as a whole has increased since 1911–20 by one year in excess of that which can be accounted for by the increasing average age of the population, but for certain organs, such as the tongue, it has advanced by as much as 4 years.

Manner of Solemnization of Marriage (pp. 173–177).

A quinquennial tabulation analysing the marriages of 1934 according to the way in which they were solemnized records a further increase in the proportion of civil as compared with religious marriages. The analysis is of interest in that it indirectly provides evidence of the incidence and changes in the incidence of the various religious communities and their distribution throughout the country. Some evidence of the extent of illiteracy in the population is also available from the record of persons signing the marriage register by mark.